Compact disc car radio 69DC980/02

Service
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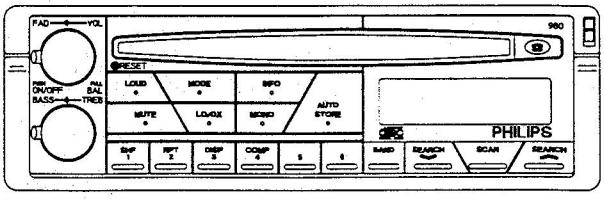

ServiceManual

COMPACT disc DIGITAL AUDIO

12 V

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CLASS 1
LASER PRODUCT
3122 110 03420

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CS 35 083

PHILIPS

1.1 TECHNICAL SPECIFICATIONS

General

Power supply	: +14.4 VDC
Fuse	: 5 A
Dimensions (w x h x d)	: 178 x 50 x 150 mm

Radio

LW wave range	: 153 – 281 kHz
MW wave range	: 522 – 1620 kHz
FM wave range	: 87.5 – 108 MHz
LW tuning grid	: 1 kHz
MW tuning grid	: 9 kHz
FM tuning grid	: 50 kHz
IF-AM(LW/MW)	: 450 kHz
IF-FM	: 10.7 MHz
Sensitivity for 26 dB S/N	: ≤ 56 µV (LW at 207 kHz) ≤ 30 µV (MW at 1053 kHz) ≤ 6 µV (FM at 98 MHz)
Limiting point α – 3 dB	: 18 dBµV ± 2 dBµV
10 dB crosstalk	: 40 dBµV ± 4dBµV

CD player CMX 200

Frequency response (1kHz Reference)	: 0 dB +1dB/-3dB (at 30 Hz) -0.5 dB +1dB/-3dB (at 18 kHz)
S/N Ratio	: ≥ 80 dB
Distortion	: ≤ 0.08 %
Channel difference	: < 3 dB
Channel crosstalk	: ≥ 70 dB

Amplifier

Output power (D ≤ 10%)	: 2 x 15W ± 1 dB/4Ω
Line out	: 630 mV +170/–130 mV
Bass	: +12/-6 dB at 60 Hz
Treble	: +12/-6 dB at 10 kHz
Loudness	: + 6 dB at 60 Hz + 4 dB at 10 kHz

3.1 ESD

All IC's and many other semi-conductors are susceptible to electrostatic discharges (ESD).

Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected to the same potentail as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

3.2 INSTRUCTIONS FOR USE

SOUND ADJUSTMENT

Volume, fader (front/rear control), balance, treble and bass are adjusted using the rotary knobs.

The LOUD button activates and deactivates the loudness (increased treble and bass volume) function of the set.

The MUTE button will temporarily silence the radio or CD.

RADIO RECEPTION

- To select FM1, FM2, FM2, AM1, AM2 or LW, press the BAND selector one or more times.

Note: FM1, FM2 and FM3 cover the same frequencies. The same is true of AM1 and AM2. The extra bands increase the possible number of presets.

Local/distant search sensitivity

You can select the search sensitivity (local or distant) to determine whether or not the radio accepts weaker stations during search tuning.

- Press the LO/DX selector to switch between local and distant search sensitivity.

The display shows 'LO' for local search sensitivity; 'DX' for distant search sensitivity.

Mono/Stereo

When selecting the FM band, the radio automatically switches to stereo mode. However, the display shows 'ST' only when a stereo signal is received.

If the station becomes weaker, the radio changes automatically and smoothly to mono reproduction. If the station becomes stronger again, the radio changes back to stereo.

If the stereo signal varies greatly due to reception conditions, you can switch to mono mode.

- Press the MONO key. ST disappears from the display.
- To switch back to stereo reproduction of the same station, press the MONO key again.

Tuning to a station

You can tune to a station using any of the following methods:

- Search tuning
- Manual tuning
- Recalling a preset station
- Auto-Store (on FM and AM/MW only)
- Scanning preset stations

SEARCH TUNING

You can quickly search for a station upwards or downwards in frequency.

- Select the desired wave band with the BAND selector.
- Briefly press SEARCH ˅ key or SEARCH ^ key.

You will recieve a station after a short time.

- To search for another station, press the same key again.

When the highest frequency (e.g. 108 MHz for FM) is reached the tuning automatically switches to the lowest frequency (e.g. 87.5 MHz for FM) and continues searching.

If the radio tunes to a station which has been stored on one of the presets, the display also shows the preset number.

If no station is found after the whole band has been searched in local (LO) mode, the radio switches to a higher sensitivity level. If again no station is found, the radio gives a beep.

MANUAL TUNING

- Switch from search tuning mode to manual tuning mode by pressing **both** SEARCH ˅ and SEARCH ^ at the same time until you hear a beep.
- Select the desired frequency with the SEARCH ˅ or SEARCH ^ key.

Keeping the key pressed changes the frequency quickly.

Briefly pressing the key changes the frequency by one step (0.05 MHz on FM; 9 kHz on AM/MW or 1 kHz on LW)

The radio returns to search mode if:

- the tuning keys are not used for more than 50 seconds;
- the set is switched off and on again;
- the BAND key, AUTOSTORE key, SCAN key, INFO key, MODE key or one of the presets is used.

PRESETS

You can store stations for **each** waveband on the preset buttons 1-6.

Storing a station

- Select the desired waveband using the BAND key.
- Tune-in the desired station using SEARCH ˅ and SEARCH ^.
- Keep the desired preset key pressed until the radio gives a confirmation beep (2 seconds).

The display shows: the waveband, the frequency and the preset number on which the station has been stored.

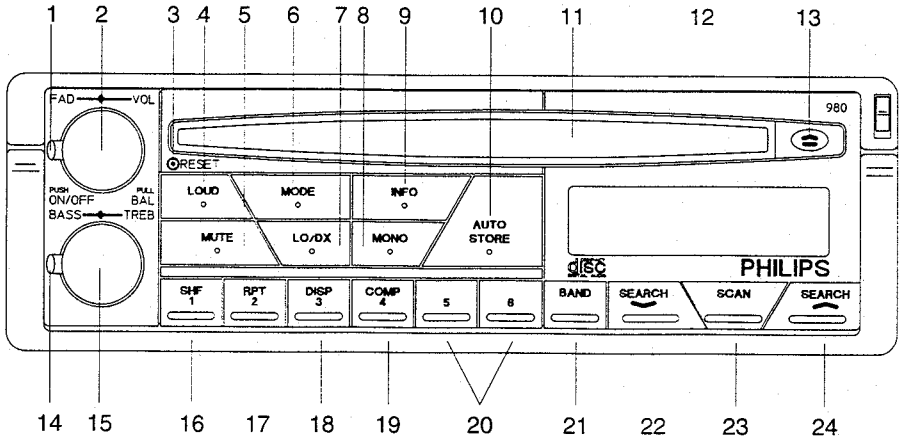
- If the preset key is pressed for less than 2 seconds, you recall the previously stored frequency instead of storing the new frequency.

Recalling a station

- Select the desired waveband using the BAND key.
- Briefly press the desired preset key.

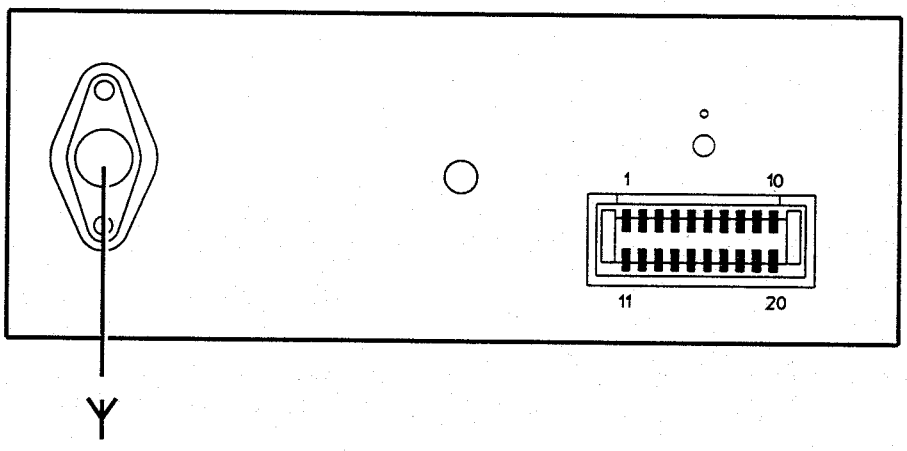
AUTO-STORE (on FM and AM/MW only)

Auto-Store is an automatic search tuning system which can store six FM or six AM/MW stations.
The stations are stored on presets 1-6 on the FM3 band or the AM2 band.



2.1 EXPLANATION OF CONTROLS

1 Fader
2 On/off; volume; balance (pull)
3 Reset
4 Loudness
5 Mute
6 Radio/CD mode
7 Local/distant tuning
8 Mono/stereo reception
9 Info (traffic information)
10 Auto–store
11 Compact disc slot CMX200
12 Display
13 CD eject
14 Bass
15 Treble
16 Shuffle play; preset 1
17 Repeat track; preset 2
18 Elapsed time display; preset 3
19 Dynamic compression; preset 4
20 Presets 5 and 6
21 LW–MW–FM band select
22 Tunning down; Previous track
23 Preset scan; Track scan
24 Tunning up; Next track



2.2 EXPLANATION OF CONNECTIONS

(Mounting sleeve wire colors given in parenthesis)
1 Not used
2 Line-out front ground (black)
3 Line-out front left (white jack, black)
4 Line-out front right (red jack, black)
5 +12V permanent (yellow/red)
6 +12V permanent (yellow/red)
7 +12V switched (red)
8 Ground (brown)
9 Speaker right front +
10 Speaker right front –
11 Not used
12 Line-out rear ground (grey)
13 Line-out rear left (white jack, grey)
14 Line-out rear right (red jack, grey)
15 External illumination
16 Not used
17 Automatic aerial
18 Ground
19 Speaker left front +
20 Speaker left front –

When the key is released, playback continues from that point.

Repeating a track

- Press the RPT key. The display shows 'RPT' and the current track will be played repeatedly.
- Press the RPT key again to return to normal play.

Pause

- Press the MUTE key. Playback stops and the display shows 'MUTE'.
- To continue play press MUTE again.

Sound compression

If the background noise is high and there are passages of low-level recording on the disc, you may want to reduce the dynamic range (the difference between the highest and lowest sound levels).

- Press the COMP key. The display shows 'COMP'. The low passages will be amplified and the high passages attenuated.
- Press the COMP key again to switch off sound compression.

Switching between CD and radio

- Press the MODE key.

CD playback stops but the player remembers the current track and time. When CD playback is resumed it starts from this track and time.

Ejecting disc

- Press the ^ key. Play stops, the disc is ejected and the set switches to radio.

Shuffle play

- Press the SHF key. The display shows 'SHF'. Play continues with tracks chosen in a random sequence.
- To return to the normal sequence, press the 'SHF' key again.

Scanning the disc

Scan gives you an expression of all tracks on the disc.

- Press the SCAN key. The first 10 seconds of each track is played in sequence. After the last track , the scan returns to the first track on the disc.
- To resume normal play, press SCAN again.

Note: If the shuffle function has been activated, the scan will be in a random order.

FURTHER INFORMATION

Display colour switch

The display lighting color can be switched to either orange or green. It is factory set to orange.

- To change the color, use the switch on the underside of the unit as indicated by a label.

Safety cut-out

To prevent damage to the laser unit, the CD is equipped to switch off if the operating temperature becomes too high. When this happens, the display shows 'hot'.

The CD can be switched on only when internal temperatures have dropped sufficiently.

Reset

- If an undefined condition occurs, push RESET using a ball-point pen.

The set's memory functions are set to their original condition.

Note: The preset station frequencies will not be erased if reset is used.

*When you use Auto-Store, the new stations **replace** any stations previously stored on the presets of the FM3 or AM2 bands.*

- Select FM (FM1, FM2 or FM3) or AM/MW (AM1 or AM2) with the BAND selector.
- Keep the AUTOSTORE key pressed for 2 seconds.

You will hear a beep, the radio mutes and the display shows 'FM3' or 'AM2' flashing.

The radio starts searching from the current frequency, first for strong stations and then for weaker stations.

The radio stores six stations. When it has finished you hear a beep. You then hear the Auto-Store station on preset 1.

Auto-Store stations are selected using presets 1-6 in the normal way.

– Under certain circumstances the radio may not be able to find six stations. In this case, the remaining presets are programmed with '0000'. If you select such a preset, the radio mutes.

PRESET SCAN

Scan gives you an impression of all the stations stored on the presets of the current waveband.

- Pressing the SCAN key starts and stops scanning. On stopping the radio remains tuned to the last-scanned preset station.
- Each preset station can be heard in turn for 5 seconds. After the last station, scan returns to the first station.

Note: Pressing a preset key also stops the scan function.

TRAFFIC INFORMATION (on FM only)

This car radio can identify FM stations which broadcast traffic information on the SK/DK traffic system. This enables you to easily tune to a station that broadcasts traffic information. If you wish, you can mute the sound of the radio apart from traffic messages, or allow traffic messages to interrupt CD playback.

If the currently-tuned station broadcasts SK/DK traffic information, 'SK' shows on the display.

Tuning to a TRAFFIC INFORMATION station.

- To tune to a station which broadcasts traffic messages, press the INFO button.

The radio is now in **INFO** mode. The display shows 'INFO'

When the radio is in INFO mode, you will hear a warning tone and the radio will automatically search for another traffic information station if:

– You are not tuned to a station using the SK/DK system.
– The currently tuned station becomes to weak.
– The broadcaster temporarily switches off the SK signal.

If no INFO station can be found, the warning tone will be repeated every 30 seconds. Pressing INFO switches off INFO mode and also the warning tone.

If the radio is in INFO mode and you tune to another station using manual tuning, you will hear repetitive beeps for about 1 minute.

Note: If the radio is in INFO mode before storing an FM station, the INFO mode will also be stored. Later when selecting the FM preset, you need not press the INFO button again.

Recieving traffic announcements only

- If the radio is in INFO mode and you want to receive traffic information only, press the MUTE button.

The radio mutes. The display shows 'MUTE', 'SK' and 'INFO'. When a traffic message is broadcast, the radio will automatically switch to the previously adjusted sound level. After the message the radio mutes again.

- To return to normal radio reception, press the MUTE button once more.

'MUTE' disappears from the display.

Note: Pressing any radio button also switches off the mute mode.

Traffic announcements during CD playback

If the radio is in INFO mode, CD playback will be interrupted by traffic announcements.

CD DECK OPERATION

This player is suitable for playing both 12cm and 8cm discs.

Always ensure that a disc is NOT LOADED in the deck before pulling the set out of the retractable unit.

Playing a disc

- Slide disc into the slot.

The disc will be ejected if it is inserted upside-down, or if the disc is extremely dirty or damaged. The display shows 'Err' for a few seconds.

The set switches on automatically, and the display shows 'CD-IN'. The number of tracks and the total playing time of the disc is displayed for two seconds.

Playback starts at track one and continues with each track on the disc. When the last track has finished, playback repeats starting with track one.

Time display

During playback, the display shows the track number and a time indication.

- Press the DISP key to switch between the time elapsed for the current track and the time elapsed for the complete disc.

Selecting another track

- Press SEARCH ^ to move to the next track.
- Press SEARCH ˅ to move to the previous track. Pressing SEARCH ˅ once returns to the beginning of the current track.

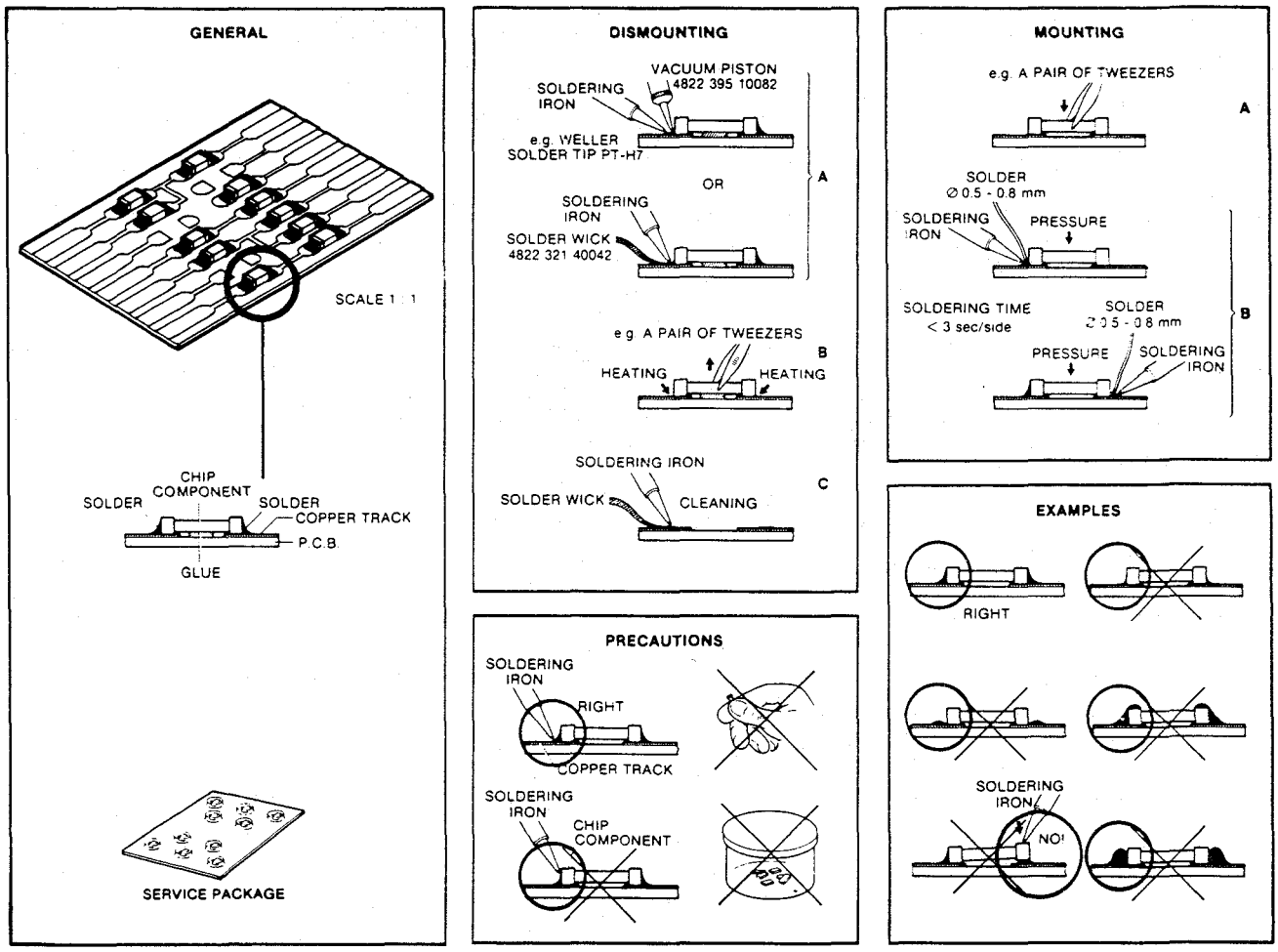
Note: Holding the key pressed changes the track number quickly.

Manual search

- Press both SEARCH ˅ and SEARCH ^ together. The set gives a confirmation beep.
- To search forward, keep the SEARCH ^ key pressed.
- To search backward, keep the SEARCH ˅ key pressed.

SYMPTOM	CAUSE/REMEDY
CD does not work.	- Defective supply voltage to CD: Check IC601, Q604 and Q605. - Defective flexible cable from main board to keyboard.
No FM or weak sensitivity.	- Defective FM tuner. - Defective diode: Check D406, D407, D408 and D409. - Defective FM supply voltage: Check Q407 and Q410.
No MW/LW or weak sensitivity.	- Defective AM tuner. - Defective AM supply voltage: Check Q408 and Q409.
SEARCH cannot find a station.	- Defective IC301 (FM). - Defective VR102 (FM). - Defective Q203, Q213 or Q212 (MW/LW).
CD compressor does not work.	- Defective IC701 or IC702.
SEARCH does not work. (frequency locks-up)	- Defective tuning voltage circuit: Check Q402 and Q403. - Defective local oscillator circuit (FM or MW/LW): Check OSC signal.
No back-up power supply on memory.	- Defective battery cell. - Defective circuit of Q613, Q609 and Q611.

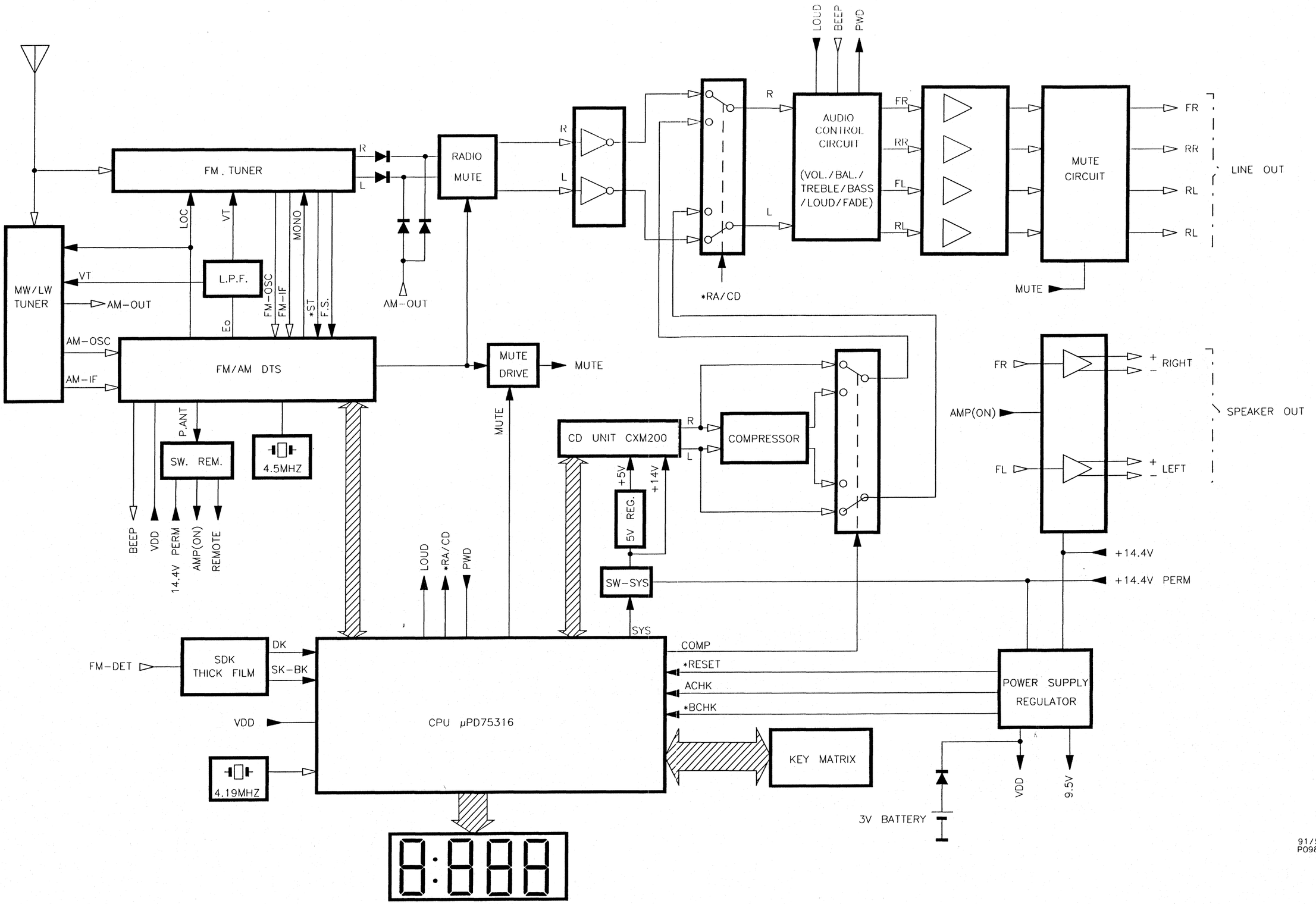
3.3 HANDLING CHIP COMPONENTS



3.4 TROUBLE SHOOTING GUIDE

SYMPTOM	CAUSE/REMEDY
Cannot switch unit on.	- Defective flexible cable from mainboard to keyboard. - Brown fuse blown.
Display operates but no audio output.	- Defective power-amplifier: Check IC801. - Defective 9.5V regulator: Check Q606. - Defective muting circuit: Check circuit of Q608, Q616, Q617, Q619 and Q622.
Audio distortion.	- Defective regulation of 9.5V on L ref. or R ref. (≈ 5V): Check circuit of Q614, Q606, IC602 and IC601.

4.0 BLOCK DIAGRAM



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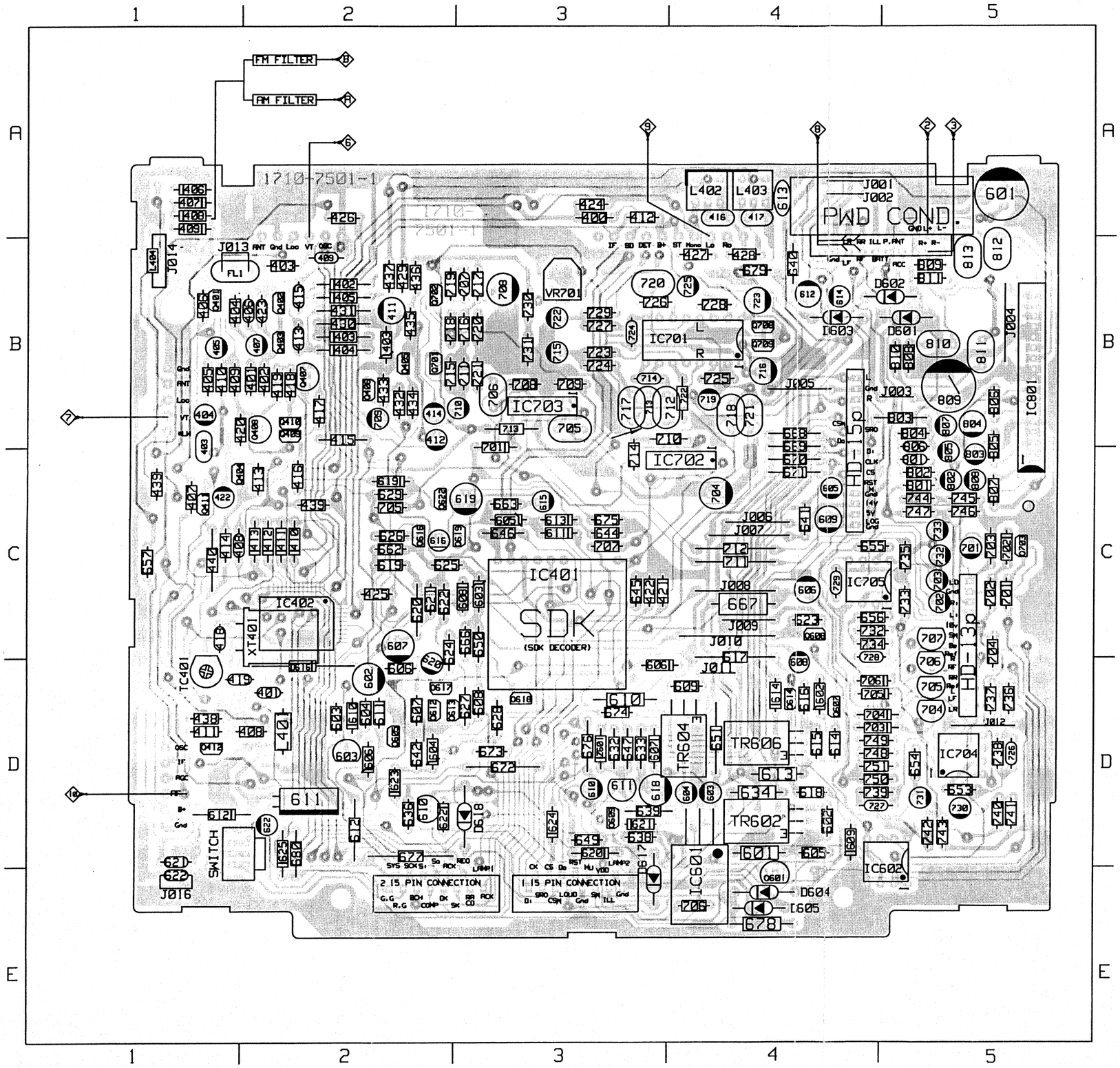
P0980G_BK00A

5.1 MAIN PCB

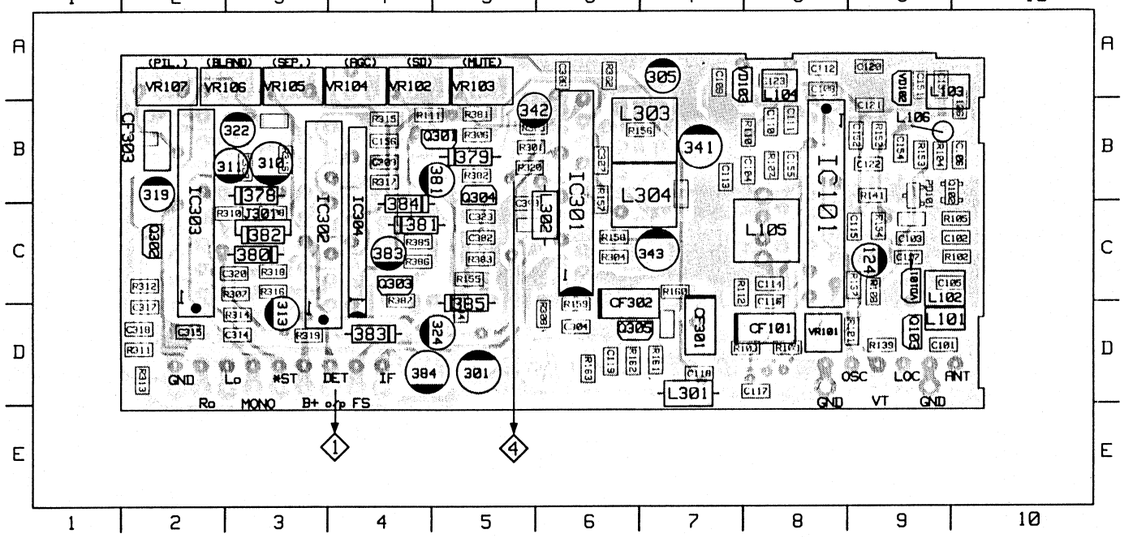


C401	D2	C808	C4	Q406	B2	R608	D3	R720	B3
C403	C1	C809	B4	Q407	B2	R609	D4	R721	B3
C404	B1	C810	B4	Q408	B2	R610	D3	R722	B4
C405	B1	C811	B4	Q409	B2	R611	D2	R723	B3
C406	B2	C812	B4	Q410	B2	R612	D2	R724	B3
C407	B2	C813	B4	Q411	C1	R613	D4	R725	B4
C408	C1	D402	B2	Q412	D1	R614	D4	R727	B3
C409	B2	D403	B2	Q601	E4	R615	D4	R728	B4
C411	B2	D404	B2	Q603	D2	R616	D4	R729	B3
C412	B2	D405	B2	Q605	D2	R617	D4	R730	B3
C413	B2	D406	A1	Q607	D4	R618	D4	R731	B3
C414	B2	D407	A1	Q608	C4	R619	C2	R732	C4
C415	B2	D408	A1	Q609	D3	R620	C2	R733	C4
C416	A4	D409	A1	Q610	D2	R621	C2	R734	C4
C417	A4	D410	C2	Q611	D3	R622	C2	R735	C4
C418	C1	D411	C2	Q612	D2	R623	C4	R736	D4
C419	D2	D412	C2	Q613	D3	R624	D2	R737	D4
C422	C1	D413	C2	Q614	D4	R625	C2	R738	D4
C423	B2	D601	B4	Q616	C2	R626	B3	R739	D4
C601	A4	D602	B4	Q617	D2	R626	C2	R740	D4
C602	D2	D603	B4	Q618	D3	R627	D3	R741	D4
C603	D4	D603	C3	Q619	C3	R628	D3	R742	D4
C604	D4	D604	E4	Q622	C2	R629	C2	R743	D4
C605	C4	D605	E4	Q701	B2	R632	D3	R744	C4
C606	C4	D606	D3	Q702	B2	R633	D3	R745	C4
C607	C2	D607	D3	Q703	C4	R634	D4	R746	C4
C608	D4	D608	C3	Q704	D4	R636	D2	R747	C4
C609	C4	D609	D4	Q705	D4	R638	D3	R748	D4
C610	D3	D610	D2	Q706	D4	R639	D3	R749	D4
C611	D2	D611	C3	Q707	C4	R640	B4	R750	D4
C612	B4	D612	D1	Q708	B4	R641	C4	R751	D4
C613	A4	D613	C3	Q709	B4	R642	D2	R801	C4
C614	B4	D614	D4	R400	A3	R644	C3	R802	C4
C615	C3	D616	D2	R401	B2	R645	C3	R803	B4
C618	D3	D617	E3	R402	B2	R646	C3	R804	B4
C619	C3	D618	D3	R403	B2	R647	D3	R805	C4
C620	D2	D619	C2	R404	B1	R649	D3	R806	B4
C621	D1	D620	D3	R405	B1	R650	C3	R807	C4
C622	D2	D621	D3	R406	B1	R651	D4	R808	B4
C622	E1	D622	D2	R407	C1	R653	D4	R809	B4
C701	C4	D623	D2	R408	D2	R654	D4	R810	B4
C702	C4	D624	D3	R409	B1	R655	C4	R811	B4
C702	C4	D625	D2	R410	B1	R656	C4	SW	D1
C703	C4	D701	B3	R411	D1	R657	C1	TC401	D1
C704	C4	D702	C4	R412	A3	R662	C2	TR602	D4
C705	B3	D703	D4	R413	C2	R663	C3	TR604	D4
C706	B3	D704	D4	R414	C1	R666	C3	TR606	D4
C707	B3	D705	D4	R415	B2	R667	C4	VR701	B3
C708	B3	D706	D4	R416	C2	R668	B4	XT401	C2
C709	B2	FL1	B1	R417	B2	R669	C4	Z403	B2
C710	B2	IC402	C2	R418	B2	R670	C4	Z601	D3
C711	B3	IC601	D4	R419	B2	R671	C4	Z602	D4
C712	B4	IC602	E4	R420	B1	R672	D3	Z604	D2
C713	B3	IC701	B3	R421	C3	R673	D3	Z605	C3
C714	B3	IC702	C4	R422	C3	R674	D3	Z606	D2
C715	B3	IC703	B3	R424	A3	R675	C3		
C716	B4	IC704	D4	R425	C2	R676	D3		
C717	B3	IC705	C4	R426	A2	R677	D2		
C718	B4	IC801	C4	R427	B4	R678	E4		
C719	B4	J001	A4	R428	B4	R679	B4		
C720	B3	J002	A4	R429	B2	R680	D2		
C721	B4	J003	B4	R430	B2	R701	C4		
C722	D3	J004	B4	R431	B2	R702	C4		
C723	B4	J005	B4	R432	B2	R703	C4		
C724	B3	J006	C4	R433	B2	R704	C4		
C725	B4	J007	C4	R434	B2	R705	C2		
C726	D4	J008	C4	R435	B2	R706	E4		
C727	D4	J009	C4	R436	B2	R707	C3		
C728	D4	J010	C4	R437	B2	R708	B3		
C729	C4	J011	D4	R438	D1	R709	B3		
C730	D4	J012	D4	R439	C1	R710	B4		
C731	D4	L401	D2	R439	C2	R711	C4		
C733	C4	L402	A4	R440	C1	R712	C4		
C801	C4	L403	A4	R601	D4	R713	B3		
C802	C4	L404	B1	R602	D4	R714	C3		
C803	C4	Q401	B1	R603	D2	R715	B2		
C804	B4	Q402	B2	R604	D2	R716	B3		
C805	C4	Q403	B2	R605	D4	R717	B3		
C806	C4	Q404	C1	R606	D2	R718	B2		
C807	B4	Q405	B2	R607	D2	R719	B2		

69DC980
CS 35 088

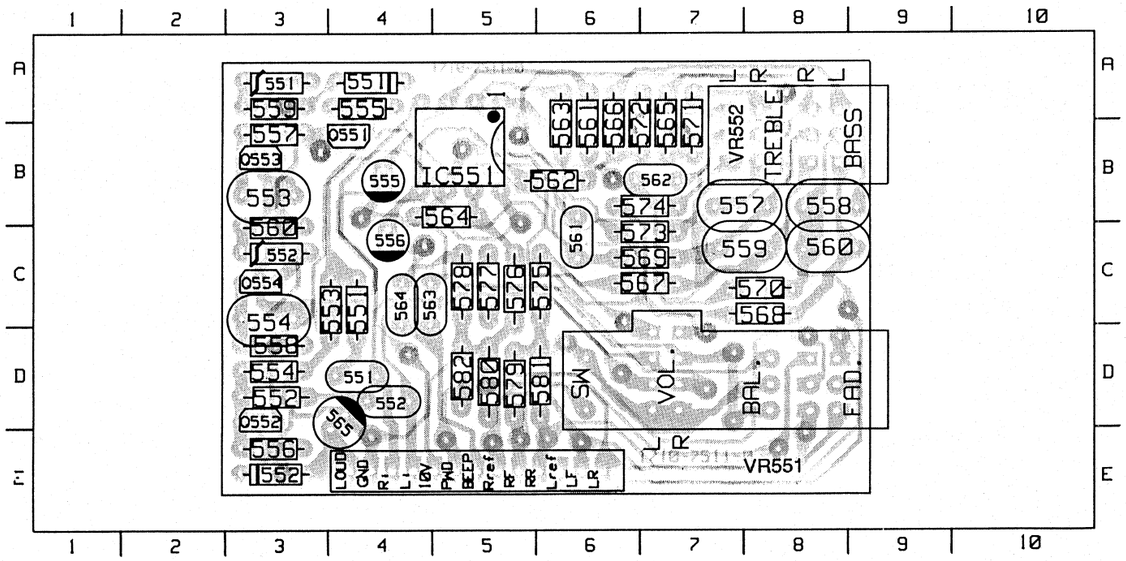
5.2 FM TUNER BOARD

C101	D9	C114	C8	C154	B9	C313	D3	C381	B5	D383	D4	L106	B9	Q305	D6	R137	C9	R162	D6	R313	D2	R385	C5
C102	C9	C115	C9	C155	B8	C314	D3	C382	C5	D384	C4	L301	D7	R101	D9	R139	D9	R163	D6	R314	D3	R386	C5
C103	C9	C116	D8	C156	B4	C315	D2	C383	C4	D385	C5	L302	B6	R102	C9	R141	D9	R301	D6	R315	B4	R387	D4
C104	B8	C117	D8	C157	A9	C317	D2	C384	D4	IC101	B8	L303	B6	R103	D8	R152	D9	R302	D6	R316	B3	VD101	C9
C105	C9	C118	D7	C301	D5	C318	D2	CF101	D8	IC301	C6	L304	B6	R104	B9	R153	D9	R303	B6	R316	C3	VD102	A9
C106	B9	C119	D6	C303	C6	C319	C2	CF301	D7	IC302	D3	PD101	C9	R105	C9	R154	C9	R304	C6	R317	B4	VR101	D8
C107	C9	C120	A9	C304	D6	C320	C3	CF302	C7	IC303	C2	Q102	B9	R106	B9	R155	C5	R306	B5	R318	C3	VR102	B4
C108	A8	C121	B9	C305	A7	C322	B3	CF303	B2	IC304	C4	Q103	A7	R107	B8	R156	B7	R307	C3	R319	D3	VR103	B5
C109	A7	C122	B9	C306	A6	C323	C5	D378	B3	L101	D9	Q104	D9	R108	D8	R157	C6	R308	D6	R320	B6	VR104	B4
C110	B8	C123	A8	C307	B6	C324	D5	D379	B5	L102	C9	Q301	B4	R109	D8	R158	C6	R309	B3	R381	B5	VR105	B3
C111	B8	C124	C9	C308	C3	C341	B7	D380	C3	L103	A9	Q302	C2	R110	B8	R159	D6	R310	C3	R382	B5	VR106	B2
C112	A8	C151	A9	C309	B4	C342	B6	D381	C5	L104	A8	Q303	C4	R111	B5	R160	C7	R311	D2	R383	C5	VR107	B2
C113	B7	C152	B9	C311	B3	C343	C7	D382	C3	L105	C8	Q304	B5	R112	D7	R161	D7	R312	C2	R384	D5		



5.3 AUDIO CONTROL BOARD

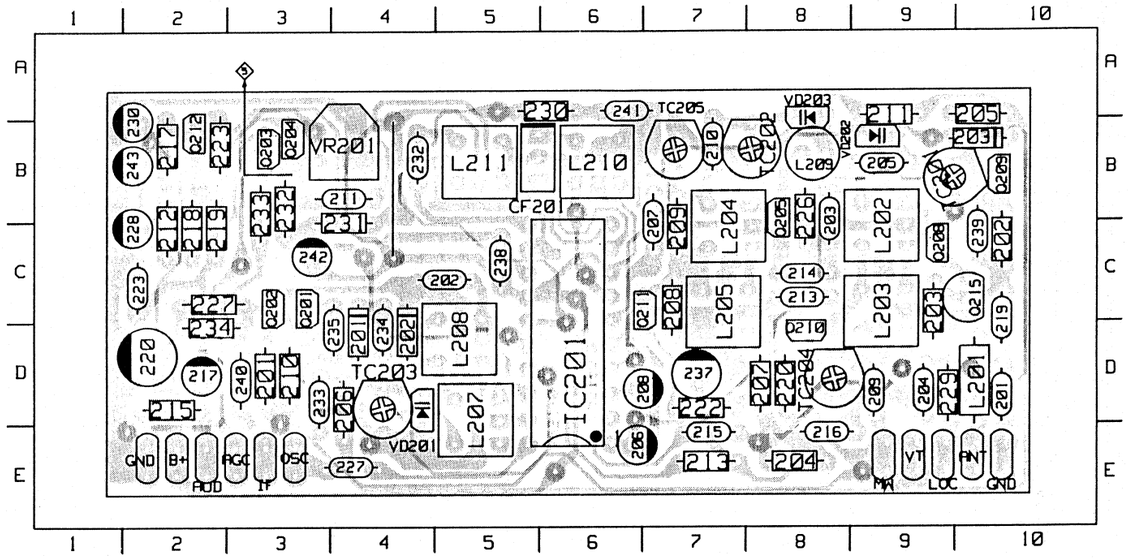
C551	D4	C557	B8	C563	C5	Q551	B4	R553	C4	R559	A3	R565	B7	R571	B7	R577	C5	ZD551	A3
C552	D4	C558	B8	C564	C4	Q552	D3	R554	D3	R560	C3	R566	B6	R572	B7	R578	C5	ZD552	C3
C553	B3	C559	C8	C565	E4	Q553	B3	R555	A4	R561	B6	R567	C7	R573	C7	R579	D5		
C554	D3	C560	C8	D551	A4	Q554	C3	R556	E3	R562	B6	R568	C8	R574	B7	R580	D5		
C555	B4	C561	C6	D552	E3	R551	C4	R557	B3	R563	B6	R569	C7	R575	C6	R581	D6		
C556	C4	C562	B7	IC551	B5	R552	D3	R558	D3	R564	B5	R570	C8	R576	C5	R582	D5		



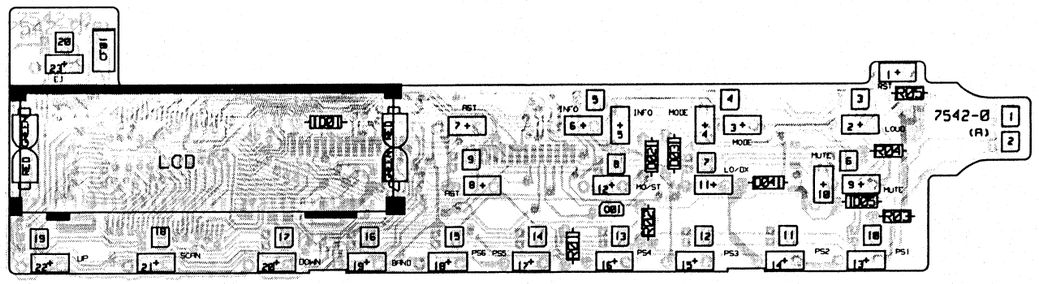
CS 35 089

5.4 AM TUNER BOARD

C201	D8	C209	B9	C219	D9	C234	D4	C243	B2	L204	C7	Q202	C3	Q212	B2	R207	D8	R217	B2	R229	D9	TC203	D4
C202	C5	C210	B7	C220	D2	C235	D4	CF201	B5	L205	C7	Q203	B3	Q215	C9	R208	C7	R218	C2	R230	B5	TC204	D8
C203	C8	C211	B4	C223	C7	C237	D7	D201	D4	L207	E5	Q204	B3	R201	D3	R209	C7	R219	C2	R231	C4	TC205	B7
C204	D9	C213	C8	C227	E4	C238	C5	D202	D4	L208	D4	Q205	C8	R202	C9	R210	D3	R220	D8	R232	B3	VD201	D4
C205	B9	C214	C8	C228	B2	C239	C9	D203	B9	L209	B8	Q208	C9	R203	C9	R211	B9	R222	D7	R233	C3	VD202	B9
C206	E6	C215	E7	C230	A2	C240	D3	L201	D9	L210	B6	Q209	B9	R204	E8	R212	C2	R223	B3	R234	D2	VD203	A8
C207	C7	C216	E8	C232	B4	C241	A6	L202	C9	L211	B5	Q210	D8	R205	B9	R213	E7	R225	C8	TC201	B9	VR201	B4
C208	D6	C217	D2	C233	D3	C242	C3	L203	C9	Q201	C3	Q211	C7	R206	D4	R215	D2	R227	C2	TC202	B8		

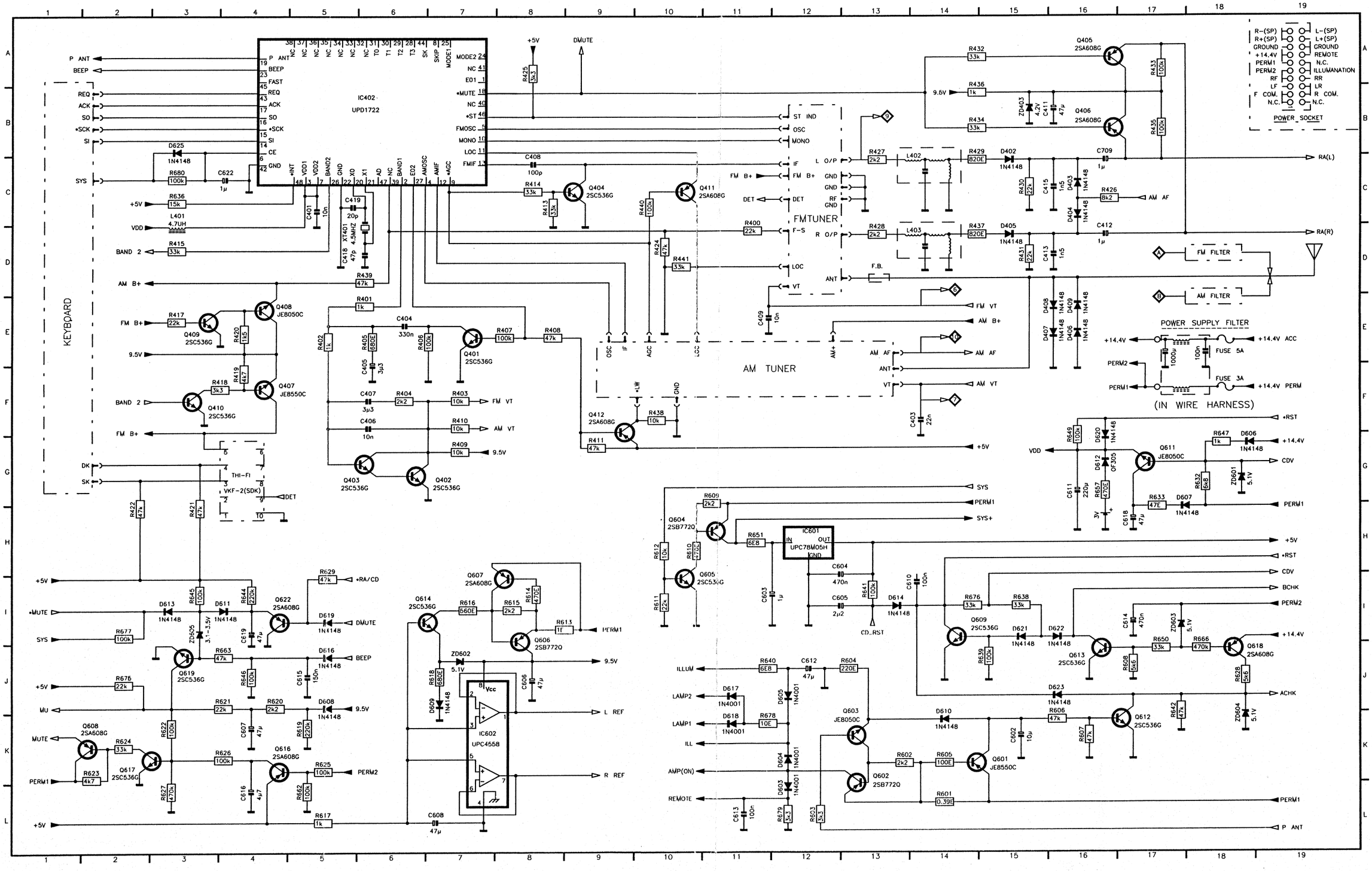


5.5 KEYBOARD



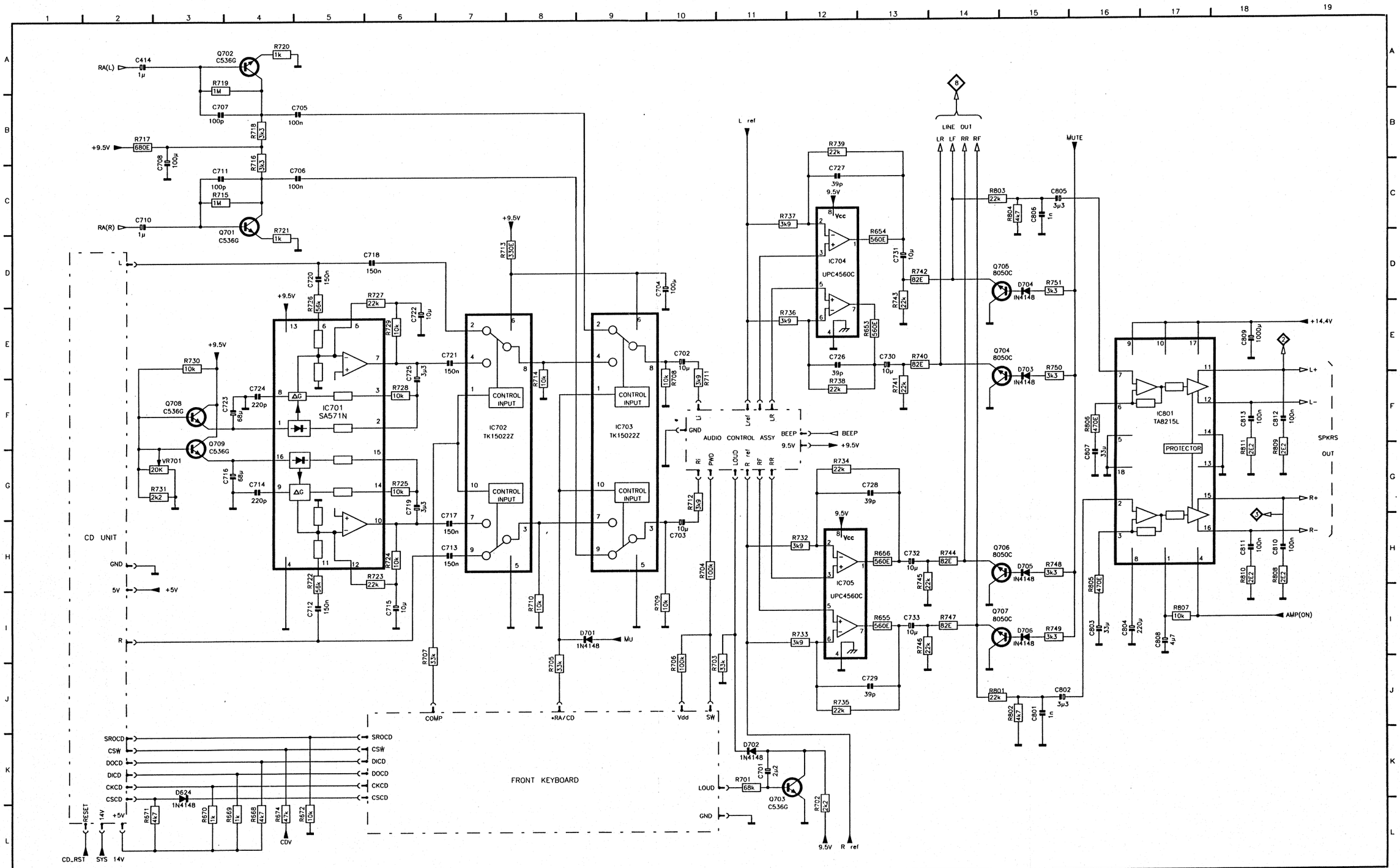
6.1.1 MAIN DIGITAL TUNING SYSTEM AND SWITCHING CIRCUITS

C401	C5	C412	D16	C606	J8	C616	L4	D406	E16	D608	J5	D618	K11	IC602	K7	Q408	E4	Q605	I10	Q616	K4	R404	F6	R414	C8	R425	A8	R434	B14	R602	K13	R611	I10	R620	J4	R629	H5	R644	I4	R663	J3	XT401	D5
C403	F14	C413	D15	C607	K4	C618	H17	D407	E15	D609	J7	D619	I5	L401	C3	Q409	E3	Q606	I8	Q617	K2	R405	E6	R415	D3	R426	C16	R435	B17	R603	L12	R612	H10	R621	J3	R632	G18	R645	I3	R666	I18	ZD403	B15
C404	E6	C415	C15	C608	L7	C619	I4	D408	E15	D610	K14	D620	G16	Q401	E7	Q410	F3	Q607	I7	Q618	J18	R406	E6	R416	E3	R427	B13	R436	B14	R604	J12	R613	I8	R622	K3	R633	G17	R646	J4	R675	J2	ZD601	G18
C405	F6	C418	D5	C610	I14	C622	C3	D409	E16	D611	I3	D621	I15	Q402	G7	Q411	C10	Q608	K2	Q619	J3	R407	E8	R418	F3	R428	D13	R437	D14	R605	K14	R614	I8	R623	K2	R636	C3	R647	G18	R676	I14	ZD602	J7
C406	F6	C419	C5	C611	G16	C709	B16	D603	L12	D612	G16	D622	I16	Q403	C5	Q412	I9	Q609	I14	Q622	I4	R408	E8	R419	I4	R429	B14	R438	I10	R606	K16	R615	I8	R624	K2	R638	I15	R649	G16	R677	I2	ZD603	I17
C407	F6	C602	K15	C612	J12	D402	B15	D604	K12	D613	I3	D623	J16	Q404	C9	Q601	K15	Q611	G17	R400	C11	R409	G7	R420	E4	R430	C15	R439	D5	R607	K16	R616	I7	R625	K5	R639	J15	R650	I17	R678	K11	ZD604	K18
C408	C8	C603	I11	C613	L11	D403	C16	D605	J12	D614	I13	D625	B3	Q405	A16	Q602	L13	Q612	K17	R401	E5	R410	F7	R421	H3	R431	D15	R440	C10	R608	J17	R617	L5	R626	K3	R640	J11	R651	H11	R679	L12	ZD605	I3
C409	E11	C604	H12	C614	I17	D404	C16	D606	G18	D616	J5	IC402	B5	Q406	B16	Q603	K12	Q613	J16	R402	E5	R411	G9	R422	H2	R432	A14	R441	D10	R609	G11	R618	J7	R627	L3	R641	I13	R657	G16	R680	C3		
C411	B15	C605	I12	C615	J5	D405	D15	D607	G17	D617	J11	IC601	H12	Q407	F4	Q604	H11	Q614	I6	R403	F7	R413	C8	R424	D10	R433	A17	R601	L14	R610	H10	R619	K5	R628	J18	R642	K17	R662	L5	THI-FI	G4		

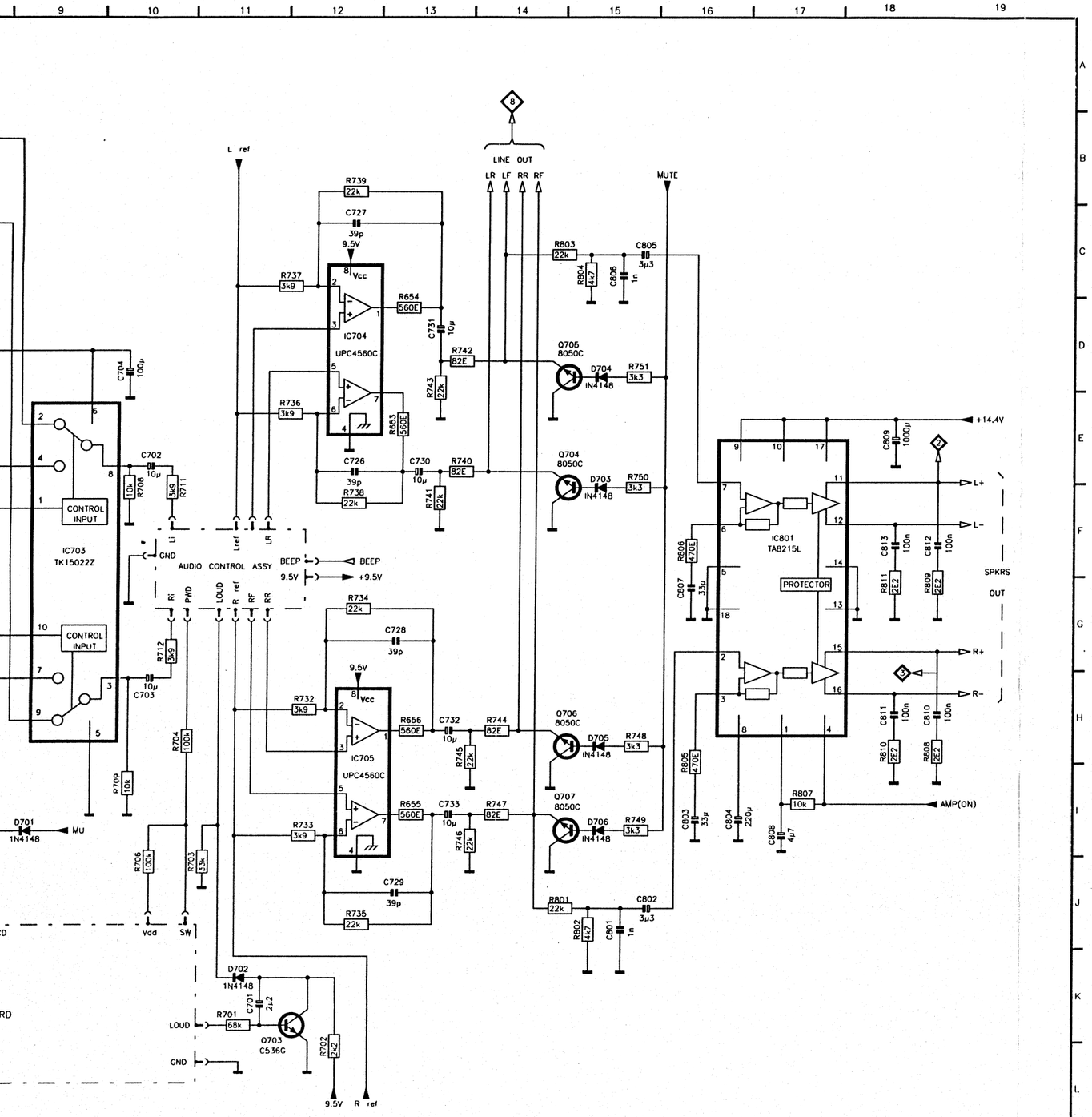


6.1.2 MAIN AUDIO CIRCUITS

C414	A2	C708	C2	C717	G6	C725	F6	C733	I13	C808	I16	D702	K10	IC704	D11	PN14	K5	PN21	J8	PN3	L1	PN37	F10	PN9	K2	Q708	I2	R670	L3	R705	J8	R713	D7	R721	C4	R729	E5	R737	C11	R745	I13	R802	J14	R810	H17
C701	K11	C710	C2	C718	D5	C726	E11	C801	J14	C809	L17	D703	L14	IC705	H12	PN15	K5	PN23	J9	PN30	G10	PN38	F10	Q701	C3	Q709	I2	R671	L2	R706	J9	R714	F7	R722	H4	R730	E2	R738	F11	R746	I13	R803	C14	R811	G17
C702	E9	C711	C3	C719	G6	C727	C11	C802	J15	C810	H17	D704	D14	IC801	F16	PN16	K5	PN24	J10	PN31	G10	PN39	F9	Q702	A3	R653	E12	R672	L4	R707	J6	R715	C3	R723	H5	R731	G2	R739	B11	R747	I13	R804	C14	VR701	G2
C703	H9	C712	I4	C720	D4	C728	G12	C803	I15	C811	H17	D705	H14	PN1	L1	PN17	K5	PN25	K10	PN32	G11	PN4	K2	Q703	K11	R654	D12	R674	L4	R708	F9	R716	C3	R724	H5	R732	H11	R740	E13	R748	H15	R805	I15		
C704	D9	C713	H6	C721	E6	C729	J12	C804	I16	C812	F17	D706	I14	PN10	I2	PN18	K5	PN26	L10	PN33	F11	PN5	K2	Q704	F14	R655	I12	R701	K10	R709	I9	R717	B2	R725	G5	R733	I11	R741	F12	R749	I15	R806	F15		
C705	B4	C714	G3	C722	E6	C730	E12	C805	C15	C813	F17	IC701	F4	PN11	H2	PN19	K5	PN27	G10	PN34	F11	PN6	K2	Q705	E14	R656	H12	R702	L11	R710	I7	R718	B3	R726	E4	R734	G12	R742	D13	R750	E15	R807	I16		
C706	C4	C715	I5	C723	F3	C731	D12	C806	C14	D624	K2	IC702	F7	PN12	H2	PN2	L1	PN28	G10	PN35	F11	PN7	K2	Q706	I14	R668	L3	R703	J10	R711	F10	R719	A3	R727	D5	R735	J12	R743	E12	R751	D15	R808	H17		
C707	B3	C716	G3	C724	F3	C732	H13	C807	G15	D701	I8	IC703	F8	PN13	D2	PN20	J6	PN29	G10	PN36	F10	PN8	K2	Q707	I14	R669	L3	R704	H10	R712	G10	R720	A4	R728	F5	R736	E11	R744	H13	R801	J14	R809	G17		



J21	J8	PN3	L1	PN37	F10	PN9	K2	Q708	F2	R670	L3	R705	J8	R713	D7	R721	C4	R729	E5	R737	C11	R745	I13	RB02	J14	RB10	H17
J23	J9	PN30	G10	PN38	F10	Q701	C3	Q709	F2	R671	L2	R706	J9	R714	F7	R722	H4	R730	E2	R738	F11	R746	I13	RB03	C14	RB11	G17
J24	J10	PN31	G10	PN39	F9	Q702	A3	R653	E12	R672	L4	R707	J6	R715	C3	R723	H5	R731	G2	R739	B11	R747	I13	RB04	C14	VR701	G2
J25	K10	PN32	G11	PN4	K2	Q703	K11	R654	D12	R674	L4	R708	F9	R716	C3	R724	H5	R732	H11	R740	E13	R748	H15	RB05	I15		
J26	L10	PN33	F11	PN5	K2	Q704	F14	R655	I12	R701	K10	R709	I9	R717	B2	R725	G5	R733	I11	R741	F12	R749	I15	RB06	F15		
J27	G10	PN34	F11	PN6	K2	Q705	E14	R656	H12	R702	L11	R710	I7	R718	B3	R726	E4	R734	G12	R742	D13	R750	E15	RB07	I16		
J28	G10	PN35	F11	PN7	K2	Q706	I14	R668	L3	R703	J10	R711	F10	R719	A3	R727	D5	R735	J12	R743	E12	R751	D15	RB08	H17		
J29	G10	PN36	F10	PN8	K2	Q707	I14	R669	L3	R704	H10	R712	G10	R720	A4	R728	F5	R736	E11	R744	H13	RB01	J14	RB09	G17		



6.2 SURVEY OF DC VOLTAGES

....V any position
....V FM position FM
....V AM position MW/LW
....V CD position CD

IC101 LA1175

1 = 1.4V
2 = 2.4V
3 = 1.8V
4 = 9.3V
5 = 3.7V
6 = 0.8V
7 = GND
8-9 = 8.5V
10 = 0V
11 = 3.3V
12 = 0V
13 = 7.8V
14 = 9.3V
15 = 5.8V
16 = 1.2V
22-22 = 2.0V

IC201 LA1135

1 = 2.4V
2 = 2V
3 = 0.9V
4 = 1V
5 = GND
6 = 2V
7,8 = 8.3V
9 = 0.8V
10 = 8.3V
11 = 0.7V
12 = GND
13 = 3V
14 = 8.3V
15 = 1.3V
16 = 3.9V
17 = 3V
18 = 5.8V
19 = 5.7V
20 = 3V

IC301 LA1145

1,2 = 2.8V
3 = GND
4 = 4V
5 = 5V
6 = 2V
7-11 = 5V
12 = 9.3V
13 = 0V
14 = GND
15 = 0V
16,17 = 5V
18 = 4.6V

IC302 LA2110

1 = 9.3V
2 = 3.5V
3,4 = 4.6V
5,6 = 4.2V
7 = 4.8V
8 = GND
9 = 1.7V
10 = 3V
11 = 0V
12 = 2.3V
13 = 0.1V
14 = 0V
15,16 = 4.5V

IC303 LA3430

1 = 9.3V
2 = 3.4V
3 = 3.5V
4 = 2.8V
5,6 = 3.6V
7 = 1.3V
8 = 0.8V
9 = GND
10 = 0.8V
11 = 2.8V
12 = 2.7V
13 = 2.6V
14,15 = 2.7V
16 = 3.5V

IC304 DN1360B

1 = 9.3V
2 = 4.6V
3 = 4.2V
4,5 = 4.5V
6 = GND
7 = 1.7V
8 = 3V
9 = 4.5V

IC551 UPC4558C

1-3 = 5V
4 = GND
5-7 = 5V
8 = 9.5V

IC601 UPC78M05H

1 = 13.7V
2 = GND
3 = 5V

IC602 UPC4558

1,3 = 5V
4 = GND
5-7 = 5V
8 = 9.4V

IC701 SA571N

1 = 1.3V
2,3 = 1.8V
4 = GND
5,6 = 1.8V
7 = 4.6V
8,9 = 1.8V
10 = 4.5V
11,12 = 1.8V
13 = 9.5V
14,15 = 1.8V
16 = 1.3V

IC702 TK15022Z

1 = 2.2V (COMP)
2-4 = 4V
5 = GND
6 = 8V
7-9 = 4V
10 = 2.2V (COMP)

IC703 TK15022Z

1 = 0V FM
= 5V CD
2-4 = 4V
5 = GND
6 = 8V
7-9 = 4V
10 = 0V FM
= 5V CD

IC704 UPC4560C

1-3 = 5V
4 = GND
5-7 = 5V
8 = 9.5V

IC705 UPC4560C

1-3 = 5V
4 = GND
5-7 = 5V
8 = 9.5V

IC801 TA8215L

1 = 13.5V
2,3 = 4.7V
4 = 13.6V
5 = GND
6-8 = 4.7V
9,10 = 14.4V
11,12 = 6V
13,14 = GND
15,16 = 6V
17 = 14.4V
18 = GND

Q102 3SK159

G = 8.9V
S = 4.5V
D1 = 3.3V
D2 = 5.7V

Q103 2SC536G

e = 0V
b = 0V
= 0.6V (LOC)
c = 2.4V
= 0V (LOC)

Q201 2SC536G

e = 0V
b = 0V MW
= 0.6V LW
c = 0.1V MW
= 4.5V LW

Q203 2SC536G

e = 8V
b = 8.2V
c = 7.5V

Q204 2SC536G

e = 0V
b = 0.7V MW
= 0V LW
c = 0V MW
= 0.6V LW

Q205 2SK184GR

G = 0V
S = 0V
D = 7.5V

Q208 2SC536G

e = 7.7V
b = 2.4V
c = 7.7V

Q209 2SC536G

e = 0V
b = 0.5V
c = 0V

Q210 2SC536G

e = 0V
b = 6.7V
c = 0V

Q211 2SC536G

e = 0V
b = 0.7V
c = 0V

Q212 2SA608G

e = 3V
b = 4.7V
c = 3V

Q213 2SC536G

e = 4.7V
b = 0.8
c = 8V

Q215 2SK163M

G = 0V
S = 0V
D = 7.7V

Q301 2SA608G

e = 5.6V
b = 5V
c = 0V

Q302 2SC536G

e = 0V
b = 0V
= 0.6V (MONO)
c = 0.7V
= 0V (MONO)

Q303 2SC536G

e = 0V
b = 0V
c = 2.8V

Q304 2SC536G

e = 4.3V
b = 5V
c = 4.8V

Q401 2SC536G

e = 0V
b = 0.1V
c = 0V

Q402 2SC536G

e = 0V
b = 0.6V
c = 1.2V

Q403 2SC536G

e = 0.6V
b = 1.1V
c = 1.2V

Q404 2SC536G

e = 0V
b = 0.6V
c = 0V

Q405 2SA608G

e = 4.2V
b = 4.7V
c = 4.3V

Q406 2SA608G

e = 4.2V
b = 4.7V
c = 4.3V

Q407 JE8550C

e = 9.5V
b = 8.7V FM
= 9.5V AM
c = 9.5V FM
= 0V AM

Q408 JE8050C

e = 0V FM
= 9.5V AM
b = 0V FM
= 8.7V AM
c = 9.5V

Q409 2SC536G

e = 0V
b = 0.6V FM
= 0V AM
c = 0V FM
= 8V AM

Q410 2SC536G

e = 0V
b = 0.6V FM
= 0V AM
c = 0V FM
= 8V AM

Q411 2SA608G

e = 0V
= 5V (LOC)
b = 4.6V
= 0V (LOC)
c = 0V
= 5V (LOC)

Q551 2SJ40D

G = 6V
S = 1.4V
D = 0V

Q552 2SJ40D

G = 6V
S = 1.4V
D = 0V

Q553 2SC536G

e = 0V
b = 0.7V
c = 0V

Q554 2SC536G

e = 0V
b = 0.7V
c = 0V

Q601 JE8550C

e = 14.4V
b = 14.3V
c = 0V

Q602 2SB772P

e = 14.3V
b = 13.5V
c = 14.2V

Q603 JE8050C

e = 1.4V
b = 2V
c = 13.5V

Q604 JEB772P

e = 14.3V
b = 13.6V
c = 14.3V

Q605 2SC536G

e = 0V
b = 0.7V
c = 0V

Q606 JEB772P

e = 14.1V
b = 13.6V
c = 9.4V

Q607 2SA608G

e = 14.4V
b = 14.1V
c = 13.6V

Q608 2SA608G

e = 14.3V
b = 13.7V
c = 14.3V

Q609 2SC536G

e = 0V
b = 0.3V
c = 5.2V

Q611 JE8050C

e = 4.7V
b = 5.3V
c = 13.8V

Q612 2SA536G

e = 4.6V
b = 0V
c = 0V

Q613 2SC536G

e = 0V
b = 0.7V
c = 0V

Q614 2SC536G

e = 4.5V
b = 5V
c = 13.2V

Q616 2SA608G

e = 5V
b = 7.2V
c = 0V

Q617 2SC536G

e = 0V
b = 0V
c = 14V

Q618 2SA608G

e = 14.4V
b = 13.6V
c = 14.2V

Q619 2SC536G

e = 0V
b = 0.6V
c = 0V

Q622 2SA608G

e = 4.7V
b = 4.2V
c = 0V

Q701 2SC536G

e = 1V
b = 1.6V
c = 4.3V

Q702 2SC536G

e = 1V
b = 1.6V
c = 4.3V

Q703 2SC536G

e = 0V
b = 0.7V
c = 0V

Q704 JE8050C

e = 0V
b = 0V
= 0.7V (MUTE)
c = 0V

Q705 JE8050C

e = 0V
b = 0V
= 0.7V (MUTE)
c = 0V

Q706 JE8050C

e = 0V
b = 0V
= 0.7V (MUTE)
c = 0V

Q707 JE8050C

e = 0V
b = 0V
= 0.7V (MUTE)
c = 0V

Q708 2SC536G

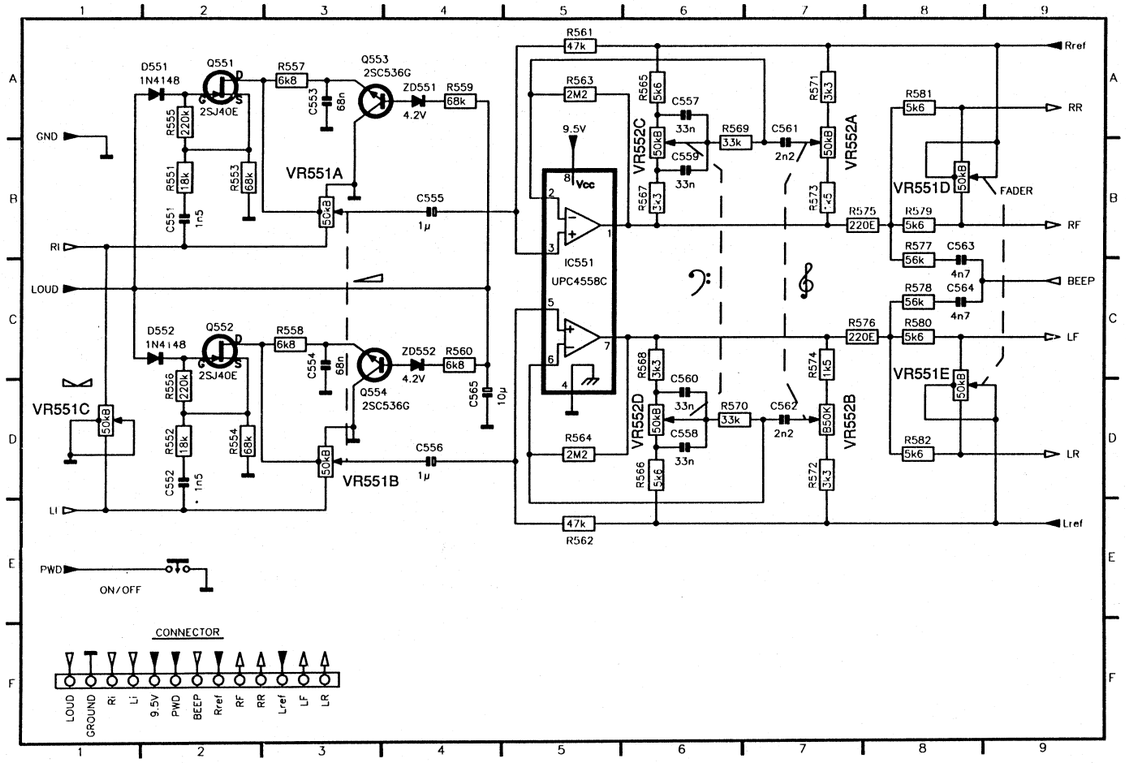
e = 1.3V
b = 1.5V
c = 9.5V

Q709 2SC536G

e = 1.3V
b = 1.5V
c = 9.5V

6.3 AUDIO CONTROL SCHEMATIC

C551	B2	C557	A6	C563	B8	Q551	A2	R553	B2	R559	A4	R565	A6	R571	A7	R577	B8	VR551A	E2	VR551G	B7
C552	D2	C558	D6	C564	C8	Q552	C2	R554	D2	R560	C4	R566	D6	R572	D7	R578	C8	VR551B	D1	VR551H	D7
C553	A3	C559	B6	C565	D4	Q553	A3	R555	A2	R561	A5	R567	B6	R573	B7	R579	B8	VR551C	B3	VR551I	B8
C554	D3	C560	D6	D551	A1	Q554	C3	R556	D2	R562	E5	R568	C6	R574	D7	R580	C8	VR551D	D3	VR551J	D8
C555	B4	C561	A7	D552	C1	R551	B2	R557	A3	R563	A5	R569	A6	R575	B7	R581	B8	VR551E	B6	ZD551	A4
C556	D4	C562	D7	IC551	C5	R552	D2	R558	C3	R564	D5	R570	D6	R576	C7	R582	D8	VR551F	D6	ZD552	C4



FM & AM TUNER VOLTAGES (REPEATED)

.... V any position
.... V FM position FM
.... V AM position MW/LW
.... V CD position CD

IC101 LA1175

1	= 1.4V
2	= 2.4V
3	= 1.8V
4	= 9.3V
5	= 3.7V
6	= 0.8V
7	= GND
8-9	= 8.5V
10	= 0V
11	= 3.3V
12	= 0V
13	= 7.8V
14	= 9.3V
15	= 5.8V
16	= 1.2V
22-22	= 2.0V

IC201 LA1135

1	= 2.4V
2	= 2V
3	= 0.9V
4	= 1V
5	= GND
6	= 2V
7,8	= 8.3V
9	= 0.8V
10	= 8.3V
11	= 0.7V
12	= GND
13	= 3V
14	= 8.3V
15	= 1.3V
16	= 3.9V
17	= 3V
18	= 5.8V
19	= 5.7V
20	= 3V

IC301 LA1145

1,2	= 2.8V
3	= GND
4	= 4V
5	= 5V
6	= 2V
7-11	= 5V
12	= 9.3V
13	= 0V
14	= GND
15	= 0V
16,17	= 5V
18	= 4.6V

IC302 LA2110

1	= 9.3V
2	= 3.5V
3,4	= 4.6V
5,6	= 4.2V
7	= 4.8V
8	= GND
9	= 1.7V
10	= 3V
11	= 0V
12	= 2.3V
13	= 0.1V
14	= 0V
15,16	= 4.5V

IC303 LA3430

1	= 9.3V
2	= 3.4V
3	= 3.5V
4	= 2.8V
5,6	= 3.6V
7	= 1.3V
8	= 0.8V
9	= GND
10	= 0.8V
11	= 2.8V
12	= 2.7V
13	= 2.6V
14,15	= 2.7V
16	= 3.5V

Q102 3SK159

G	= 8.9V
S	= 4.5V
D1	= 3.3V
D2	= 5.7V

Q103 2SC536G

e	= 0V
b	= 0V = 0.6V (LOC)
c	= 2.4V = 0V (LOC)

Q201 2SC536G

e	= 0V
b	= 0V MW = 0.6V LW
c	= 0.1V MW = 4.5V LW

Q203 2SC536G

e	= 8V
b	= 8.2V
c	= 7.5V

Q204 2SC536G

e	= 0V
b	= 0.7V MW = 0V LW
c	= 0V MW = 0.6V LW

Q205 2SK184GR

G	= 0V
S	= 0V
D	= 7.5V

Q208 2SC536G

e	= 7.7V
b	= 2.4V
c	= 7.7V

Q209 2SC536G

e	= 0V
b	= 0.5V
c	= 0V

Q210 2SC536G

e	= 0V
b	= 6.7V
c	= 0V

Q211 2SC536G

e	= 0V
b	= 0.7V
c	= 0V

Q212 2SA608G

e	= 3V
b	= 4.7V
c	= 3V

Q213 2SC536G

e	= 4.7V
b	= 0.8
c	= 8V

Q215 2SK163M

G	= 0V
S	= 0V
D	= 7.7V

Q301 2SA608G

e	= 5.6V
b	= 5V
c	= 0V

Q302 2SC536G

e	= 0V
b	= 0V = 0.6V (MONO)
c	= 0.7V = 0V (MONO)

Q303 2SC536G

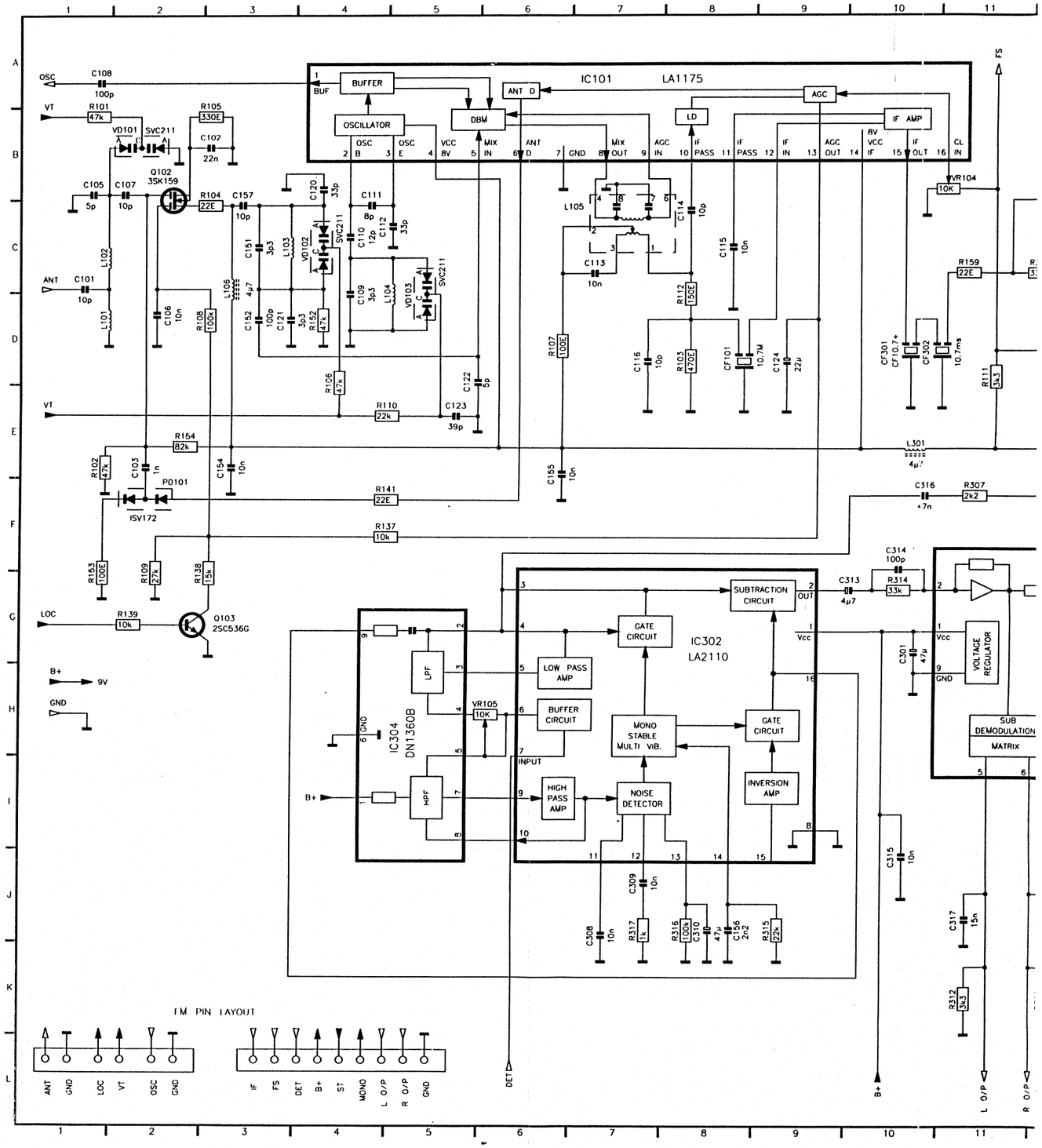
e	= 0V
b	= 0V
c	= 2.8V

Q304 2SC536G

e	= 4.3V
b	= 5V
c	= 4.8V

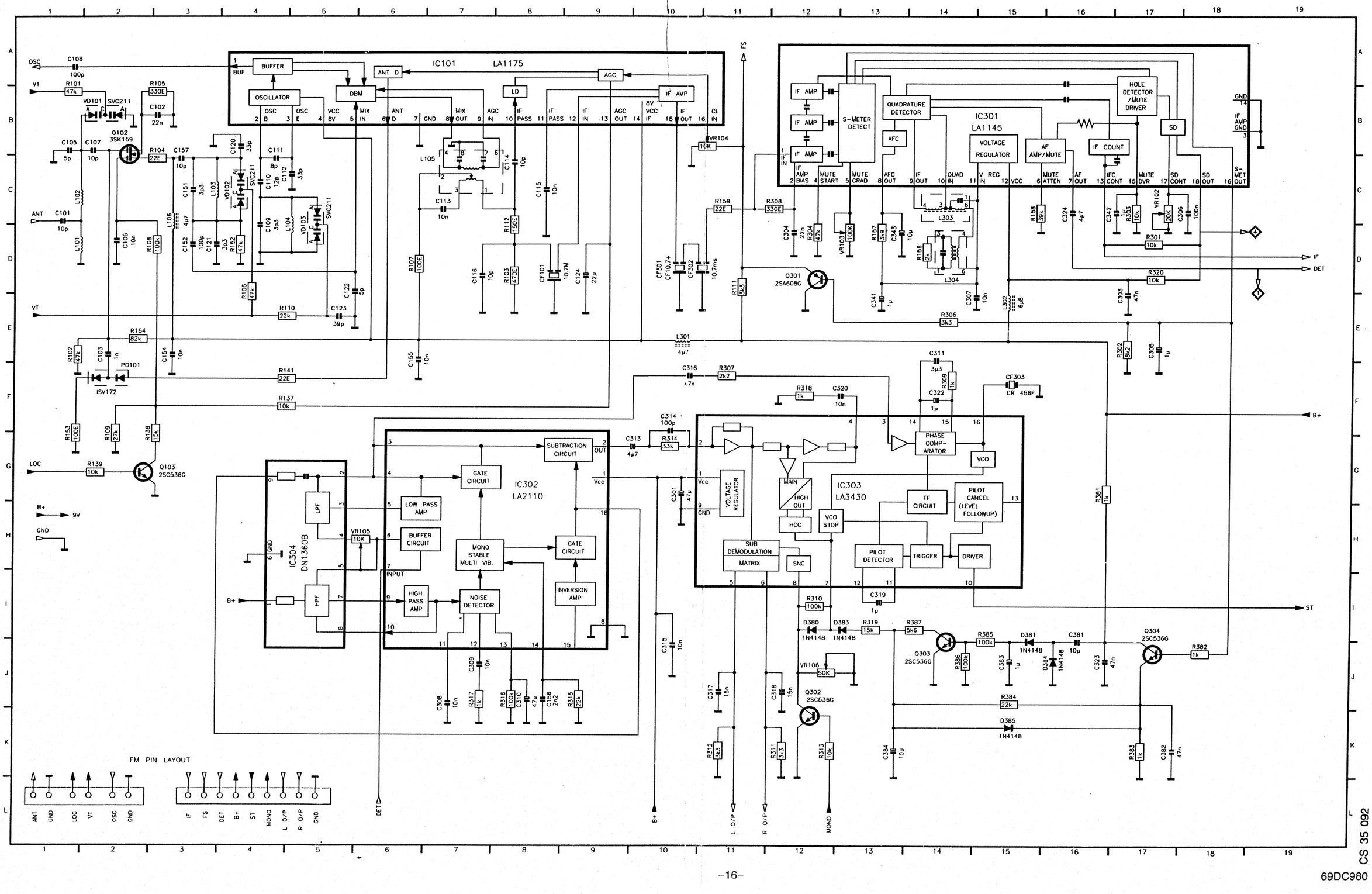
6.4 FM TUNER SCHEMATIC

C101	C1	C108	A1	C114	C8	C123	E5	C156	J8	C306	C17	C313	G9	C319	I13	C342	C16	CF101	D8	D383	I12	IC303	G13	Q102	B2
C102	B2	C109	D4	C115	C8	C124	D9	C157	B3	C307	E14	C314	F10	C320	F12	C343	D13	CF301	D10	D384	J16	IC304	H5	Q103	G3
C103	E2	C110	C4	C116	D7	C151	C3	C301	G10	C308	K7	C315	J10	C322	F14	C381	I16	CF302	D10	D385	K15	L105	C6	Q301	D12
C105	B1	C111	B4	C120	D4	C152	D3	C303	E17	C309	J7	C316	F10	C323	J16	C382	K17	CF303	F15	IC101	A7	L303	C14	Q302	J12
C106	D2	C112	C4	C121	D3	C154	E3	C304	D12	C310	J8	C317	J11	C324	C16	C383	J16	D380	I12	IC301	B14	L304	D14	Q303	J14
C107	B2	C113	C7	C122	E5	C155	F6	C305	E17	C311	E14	C318	J12	C341	E13	C384	K13	D381	I15	IC302	G8	PD101	F2	Q304	I17



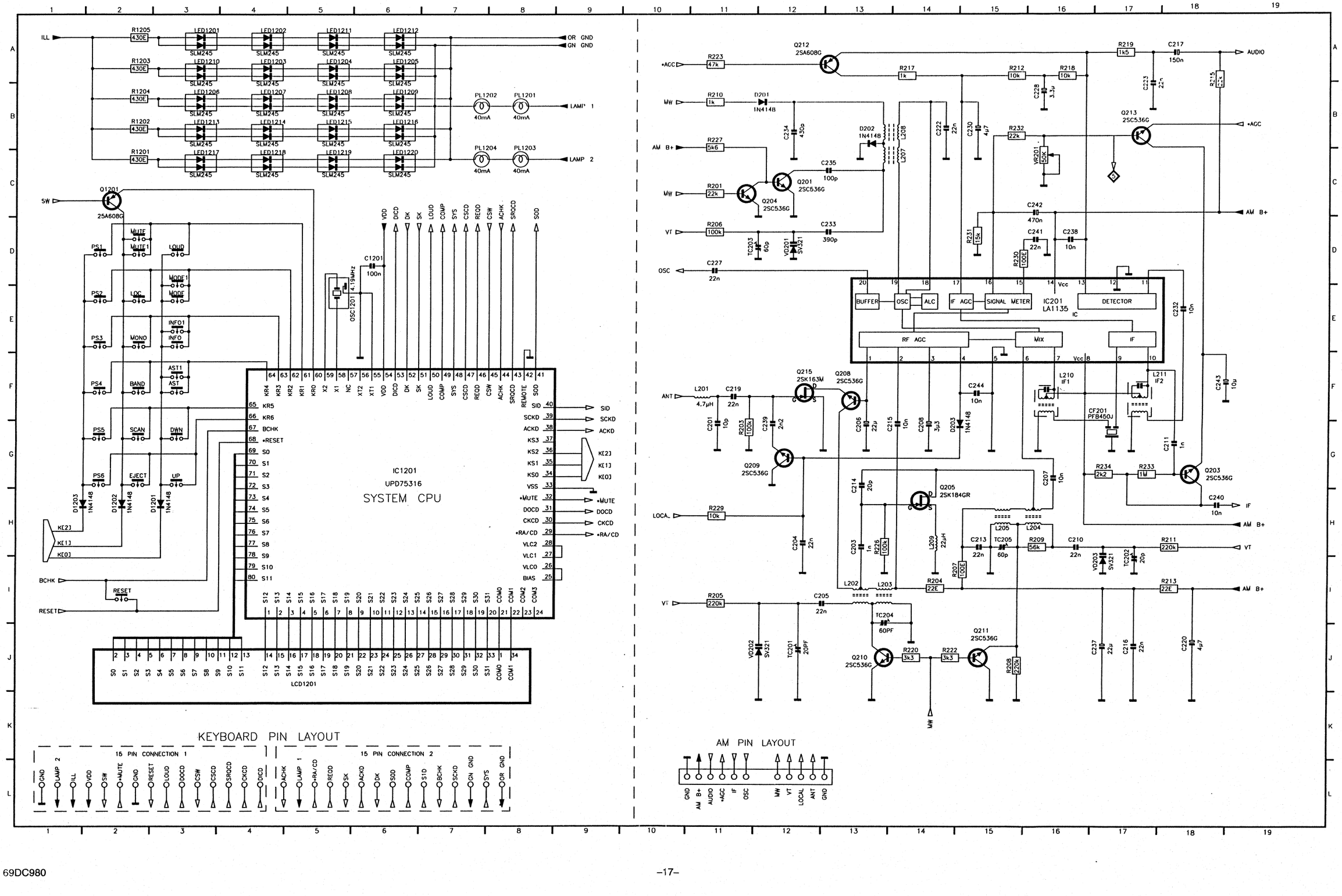
6.4 FM TUNER SCHEMATIC

C101	C1	C108	A1	C114	C8	C123	E5	C156	J8	C306	C17	C313	G9	C319	I13	C342	C16	CF101	D8	D383	I12	IC303	G13	Q102	B2	R101	B1	R107	D6	R137	F4	R154	E2	R302	E17	R309	F14	R315	J9	R381	G16	R387	I14	VR104	B11
C102	B2	C109	D4	C115	C8	C124	D9	C157	B3	C307	E14	C314	F10	C320	F12	C343	D13	CF301	D10	D384	J16	IC304	H5	Q103	G3	R102	E1	R108	D2	R138	G2	R156	D14	R303	C17	R310	I12	R316	J8	R382	J18	VD101	B1	VR105	H5
C103	E2	C110	C4	C116	D7	C151	C3	C301	G10	C308	K7	C315	J10	C322	F14	C381	I16	CF302	D10	D385	K16	L105	C6	Q301	D12	R103	D8	R109	G2	R139	G2	R157	D13	R304	D12	R311	K12	R317	J7	R383	K17	VD102	C4	VR106	J12
C105	B1	C111	B4	C120	B4	C152	D3	C303	E17	C309	J7	C316	F10	C323	J16	C382	K17	CF303	F15	IC101	A7	L303	C14	Q302	J12	R104	B2	R110	E4	R141	F4	R158	C15	R306	E14	R312	K11	R318	F12	R384	J15	VD103	D5		
C106	D2	C112	C4	C121	D3	C154	E3	C304	D12	C310	J8	C317	J11	C324	C16	C383	K13	D380	I12	IC301	B14	L304	D14	Q303	J14	R105	B2	R111	E11	R162	D4	R159	C11	R307	F11	R313	K12	R319	I13	R385	I15	VR102	C17		
C107	B2	C113	C7	C122	E5	C155	F6	C305	E17	C311	E14	C318	J12	C341	E13	C384	K13	D381	I15	IC302	G8	PD101	F2	Q304	I17	R106	E4	R112	D8	R163	G1	R301	D17	R308	C11	R314	G10	R320	D17	R386	J14	VR103	D13		



6.5 AM TUNER & KEYBOARD SCHEMATIC

AST	F3	C206	G13	C216	J17	C230	B15	C240	H18	D1203	H1	INFO	E3	LED1203	A4	LED1211	A5	LED1219	C5	MUTE1	D2	PS3	E2	Q205	H14	R1201	C2	R205	I11	R213	I18	R226	H13	RESET	I2	VD201	D12
AST1	F3	C207	G16	C217	A18	C232	E18	C241	D16	D201	B11	INFO1	E3	LED1204	A5	LED1212	A6	LED1220	C6	OSC1201	E5	PS4	F2	Q208	F13	R1202	B2	R206	D11	R215	B18	R227	B11	SCAN	G2	VD202	J11
BAND	F2	C208	G14	C219	F11	C233	D12	C242	C16	D202	B13	L201	F11	LED1205	A6	LED1213	B3	LOC	E2	PL1201	B8	PS5	G2	Q209	G11	R1203	A2	R207	I15	R217	A14	R229	H11	TC201	J12	VD203	I17
C1201	D6	C210	H16	C220	J18	C234	B12	C243	F18	D203	G14	L207	C14	LED1206	B3	LED1214	B4	LOUD	D3	PL1202	B7	PS6	G2	Q210	J13	R1204	B2	R208	J15	R218	A16	R230	D15	TC202	I17	VR201	C16
C201	G11	C211	G18	C222	B14	C235	C12	C244	F15	DWN	G3	L208	B14	LED1207	B4	LED1215	B5	MODE	E3	PL1203	C8	PS6	G2	Q1201	C2	R1205	A2	R209	H16	R219	A17	R231	D15	TC203	D11		
C203	H13	C213	H15	C223	B17	C237	J17	CF201	F16	EJECT	G2	LCD1201	J5	LED1208	B5	LED1216	B6	MODE1	D3	PL1204	C7	Q201	C12	Q212	A12	R201	C11	R210	B11	R220	J14	R232	B15	TC204	I13		
C204	H12	C214	H13	C227	D11	C238	D16	D1201	H3	IC1201	G6	LCD1201	A3	LED1209	B6	LED1217	C3	MONO	E2	PS1	D2	Q203	G18	Q213	B17	R203	G11	R211	H18	R222	J14	R233	G17	TC205	H15		
C205	I12	C215	G14	C228	B16	C239	G12	D1202	H2	IC201	E16	LED1202	A4	LED1210	A3	LED1218	C4	MUTE	D2	PS2	E2	Q204	C12	Q215	F12	R204	I14	R212	A15	R223	A11	R234	G17	UP	G3		



7.1 ALIGNMENT TABLE

For more information see general information "General alignment procedures for car radio"

Alignment	SK					
Quadrature detector	FM	98 MHz, 10 µV Δf = 75 KHz	B		L303 L304	1 align for symetrical distortion on sine wave
α–3 dB	FM	93 MHz f mod. = 1 KHz Δf = 22.5 KHz	1 mV	B		2 0 dB (775 mV)
			8 µV		VR103	2 -3 dB
FM search level	FM	98 MHz, 40 µV f mod = 1 KHz Δf = 22.5 KHz	B		VR102	4 0 V, 5 V pulse
Stereo seperation	FM	98 MHz, 2 mV stereo signal L only	B		VR105	L 2 – R 3 maximum separation
SDS (10dB cross talk)	FM	98 MHz, 150 µV stereo signal L only	B		VR106	L 2 – R 3 = 10dB seperation
AM-search level	MW	999 KHz, 40 µV f mod = 1 KHz	A		VR201	5 0.7 V DC ± 0.1

7.2 CHECK TABLE

For more information see general information "General alignment procedures for car radio"

Check	SK					Setting of controls	
VC–FM	FM				87.5 MHz		6 1.2 ± 0.1 V DC
					108 MHz		6 ≤ 8 V DC
VC–MW	MW				522 KHz		7 1.2 ± 0.1 V DC
					1620 KHz		7 7.9 ± 0.2 V DC
VC–LW	LW				153 KHz		7 1.0 ± 0.1 V DC
α – 3 dB	FM	98 MHz Δf = 22.5 KHz fmod = 1 KHz	1 mV	B			8 0 dB (775 mV)
			8 µV				8 -3 dB

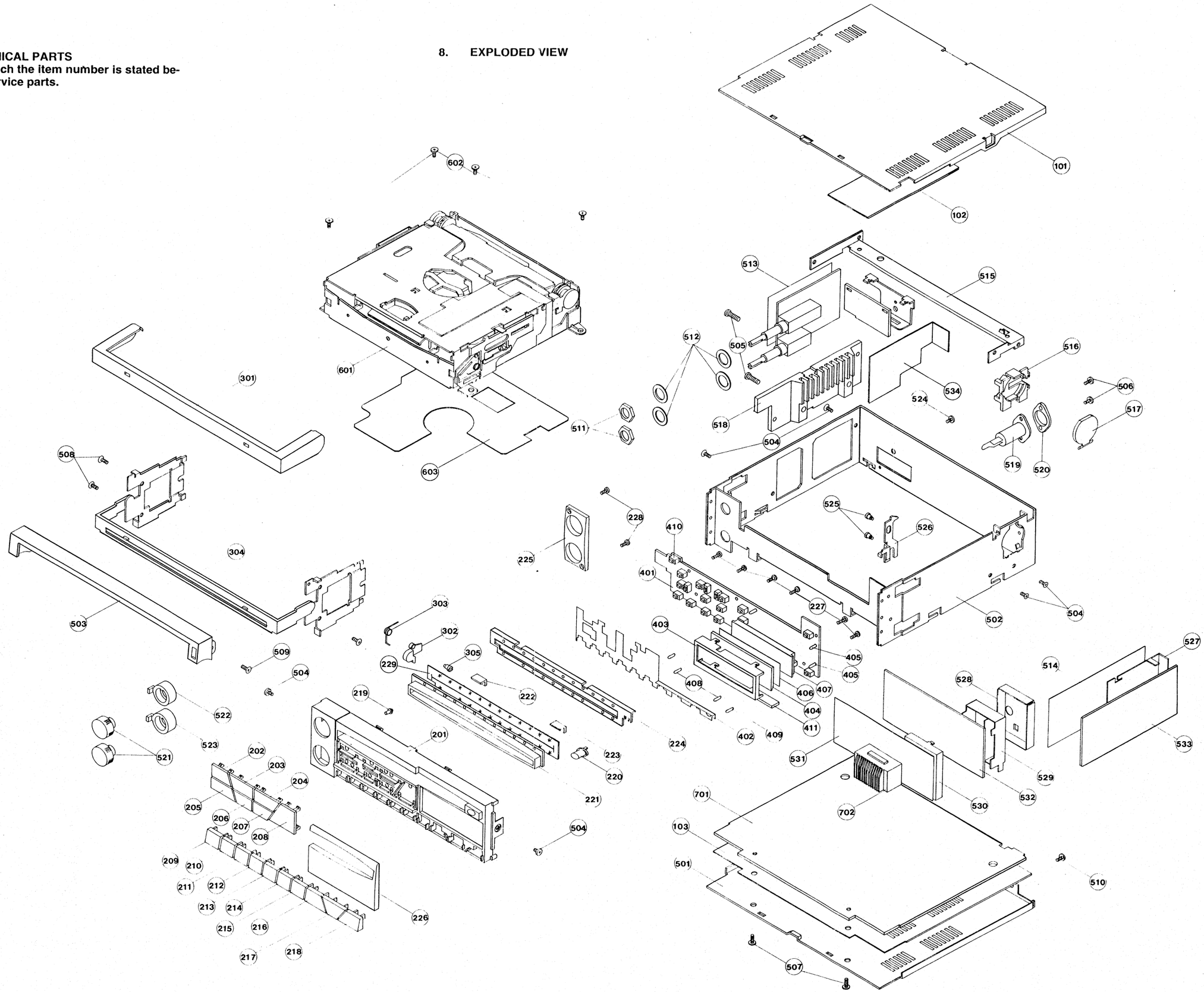
Check	SK					Setting of controls	
FM-Mute	FM	98 MHz, 1 mV		B			8 0 dB (775 mV)
		No signal					8 ≤ -24 dB
26 dB – SNR	FM	98 MHz, 6 µV, Δf = 22.5	f mod. = 1kHz	B			8 0 dB (775 mV)
			without mod.				8 ≤ -26 dB
	MW	999 kHz, 30 µV	1 kHz; 30% AM	A			8 0 dB (775 mV)
			without mod.				8 ≤ -26 dB
	LW	207 kHz, 56 µV	1 kHz, 30% AM	A			8 0 dB (775 mV)
			without mod.				8 ≤ -26 dB
Demodulated FM-levels	FM	98 MHz, 1mV, Δf = 22.5 kHz f mod. = 1 kHz		B			9 60 mV ± 1 dB
Demodulated AM-levels	MW	999 kHz, 1mV 1kHz, 30% AM		A			10 120 mV ± 1 dB
Cross talk	FM	98 MHz, 2 mV stereo signal, (L + R)		B		+	L 2 R 3 0 dB (775 mV)
		98 MHz, 2 mV stereo - R					R 3 - L 2 ≥ 26 dB
SDS/10 dB Crosstalk	FM	98 MHz, 2 mV stereo signal, (L + R)		B		+	L 2 R 3 0 dB (775 mV)
		98 MHz, 2 mV stereo - R					R 3 - L 2 = 10 dB
SDK-sensitivity	FM + INFO	98 MHz, 60 µV, Δf = 22.5 kHz, f mod. = 1 kHz + SK + BK + DK		B			**INFO SK** in display, Radio mode override CD mode when INFO "on".

9.1 LIST OF MECHANICAL PARTS

Only those parts of which the item number is stated below, are considered service parts.

101	4822 701 12021
201	4822 459 50627
202	4822 410 61392
203	4822 410 61398
204	4822 410 61396
205	4822 410 61393
206	4822 410 61397
207	4822 410 61395
208	4822 410 61394
209	4822 410 61401
210	4822 410 61402
211	4822 410 61403
212	4822 410 61404
213	4822 410 61405
214	4822 410 61406
215	4822 410 61407
216	4822 410 61409
217	4822 410 61411
218	4822 410 61408
219	4822 410 61412
220	4822 410 61399
221	4822 466 62055
222	4822 381 11271
223	
303	4822 492 42546
304	4822 498 40576
305	4822 535 80857
401	4822 214 51888
404	4822 130 90997
405	4822 134 41074
406	4822 380 20413
408	4822 462 71772
409	4822 462 71773
410	4822 276 13113
411	4822 466 62056
501	4822 701 12022

8. EXPLODED VIEW



9.2 ELECTRICAL PARTS LIST

- AM tuner PCB -

C201	4822 126 11473	10pF 50V ± 5%
C202	4822 124 23713	0.022µF 25V ± 20%
C203	4822 126 11475	1000pF 50V ± 10%
C204	4822 124 23713	0.022µF 25V ± 20%
C205	4822 124 23713	0.022µF 25V ± 20%
C206	4822 124 23742	22µF 16V ± 20%
C207	4822 124 23709	0.01µF 16V ± 20%
C208	4822 124 23729	3.3µF 16V ± 20%
C209	4822 126 11474	100pF 50V ± 10%
C210	4822 124 23713	0.022µF 25V ± 20%
C211	4822 126 11475	1000pF 50V ± 10%
C213	4822 124 23713	0.022µF 25V ± 20%
C214	4822 126 11476	20pF 50V ± 5%
C215	4822 124 23709	0.01µF 16V ± 20%
C216	4822 124 23713	0.022µF 25V ± 20%
C217	4822 124 23738	0.22µF 25V ± 20%
C219	4822 124 23713	0.022µF 25V ± 20%
C220	4822 124 23732	47µF 16V ± 20%
C223	4822 124 23713	0.022µF 25V ± 20%
C227	4822 124 23713	0.022µF 25V ± 20%
C228	4822 124 23729	3.3µF 16V ± 20%
C230	4822 124 23757	4.7µF 25V ± 20%
C232	4822 124 23709	0.01µF 16V ± 20%
C237	4822 124 23742	22µF 16V ± 20%
C238	4822 124 23709	0.01µF 16V ± 20%
C239	4822 126 11472	2200pF 16V ± 20%
C240	4822 124 23709	0.01µF 16V ± 20%
C241	4822 124 23713	0.022µF 25V ± 20%
C242	4822 124 23731	0.47µF 16V ± 20%
C243	4822 124 23727	10µF 16V ± 20%
CF201	4822 242 80254	CER FIL BFU459C
D201	4822 130 30621	DIODE 1N4148
D202	4822 130 30621	DIODE 1N4148
D203	4822 130 30621	DIODE 1N4148
IC201	4822 209 63917	LA1135
L201	4822 157 53774	COIL 4.7µH ± 10%
L202	4822 157 63265	IFT 796kHz
L203	4822 157 63266	IFT 252kHz BLUE
L204	4822 157 63267	IFT 796kHz WHITE
L205	4822 157 63268	IFT 252kHz PINK
L207	4822 157 63269	IFT 796kHz BLACK
L208	4822 157 63271	IFT 796kHz RED
L209	4822 158 50066	COIL FERRITE 22µH
L210	4822 157 63272	IFT 455kHz YELLOW
L211	4822 157 63273	IFT 450kHz BLACK
Q201	4822 130 42298	2SC536G
Q202	4822 130 42298	2SC536G
Q203	4822 130 42298	2SC536G
Q204	4822 130 42298	2SC536G
Q205	4822 130 62722	2SK184GR FET
Q208	4822 130 42298	2SC536G
Q209	4822 130 42298	2SC536G
Q210	4822 130 42298	2SC536G
Q211	4822 130 42298	2SC536G
Q212	4822 130 62205	2SA608G
Q215	4822 130 42833	2SK163M
R201	4822 050 12203	22k 1/8W ± 5%
R203	4822 050 11004	100k 1/8W ± 5%
R204	4822 050 12209	22Ω 1/8W ± 5%
R205	4822 050 12204	220k 1/8W ± 5%
R206	4822 050 11004	100k 1/8W ± 5%
R207	4822 050 11001	100Ω 1/8W ± 5%
R208	4822 050 12204	220k 1/8W ± 5%
R209	4822 050 15603	56k 1/8W ± 5%
R210	4822 050 11002	1k 1/8W ± 5%
R211	4822 050 12204	220k 1/8W ± 5%
R212	4822 050 11003	10k 1/8W ± 5%
R213	4822 050 12209	22Ω 1/8W ± 5%
R215	4822 050 12203	22k 1/8W ± 5%
R217	4822 050 11002	1k 1/8W ± 5%
R218	4822 050 11003	10k 1/8W ± 5%
R219	4822 050 11502	1k5 1/8W ± 5%
R220	4822 050 13302	3k3 1/8W ± 5%
R222	4822 050 13302	3k3 1/8W ± 5%
R223	4822 050 14703	47k 1/8W ± 5%
R226	4822 050 11004	100k 1/8W ± 5%
R227	4822 050 15602	5k6 1/8W ± 5%
R229	4822 050 11003	10k 1/8W ± 5%
R230	4822 050 11001	100Ω 1/8W ± 5%
R231	4822 050 11503	15k 1/8W ± 5%
R232	4822 050 12203	22k 1/8W ± 5%
R233	4822 050 11005	1M 1/8W ± 5%
R234	4822 050 12202	2k2 1/8W ± 5%
TC201	4822 125 50309	TRIM CER 20pF
TC202	4822 125 50309	TRIM CER 20pF
TC203	4822 125 50309	TRIM CER 20pF
TC204	4822 125 50377	TRIM CER 60pF
TC205	4822 125 50377	TRIM CER 60pF
VR201	4822 100 11738	SVR 50k

- Audio PCB -

C551	4822 126 11488	1500pF 50V ± 10%
C552	4822 126 11488	1500pF 50V ± 10%
C553	4822 124 23719	0.068µF 50V ± 10%
C554	4822 124 23719	0.068µF 50V ± 10%
C556	4822 124 23736	1µF 50V ± 20%
C557	4822 124 23718	0.033µF 50V ± 10%
C558	4822 124 23718	0.033µF 50V ± 10%
C559	4822 124 23718	0.033µF 50V ± 10%
C560	4822 124 23718	0.033µF 50V ± 10%
C561	4822 126 11489	2200pF 50V ± 10%
C562	4822 126 11489	2200pF 50V ± 10%
C563	4822 126 11491	4700pF 50V ± 10%
C564	4822 126 11491	4700pF 50V ± 10%
D551	4822 130 30621	DIODE 1N4148
D552	4822 130 30621	DIODE 1N4148
IC551	4822 209 72939	IC µPC4558C
Q551	4822 130 62721	FET 2SJ40E
Q552	4822 130 62721	FET 2SJ40E
Q553	4822 130 42298	2SC536G
Q554	4822 130 42298	2SC536G
R551	4822 116 52251	18k 1/8W ± 5%
R552	4822 116 52251	18k 1/8W ± 5%
R553	4822 050 16803	68k 1/8W ± 5%
R554	4822 050 16803	68k 1/8W ± 5%
R555	4822 050 12204	220k 1/8W ± 5%
R556	4822 050 12204	220k 1/8W ± 5%
R557	4822 050 16802	6k8 1/8W ± 5%
R558	4822 050 16802	6k8 1/8W ± 5%
R559	4822 050 16802	6k8 1/8W ± 5%
R560	4822 050 16802	6k8 1/8W ± 5%
R561	4822 050 14703	47k 1/8W ± 5%
R562	4822 050 14703	47k 1/8W ± 5%
R563	4822 050 22205	2M2 1/8W ± 5%
R564	4822 050 22205	2M2 1/8W ± 5%
R565	4822 050 15602	5k6 1/8W ± 5%
R566	4822 050 15602	5k6 1/8W ± 5%
R567	4822 050 13302	3k3 1/8W ± 5%
R568	822 050 13302	3k3 1/8W ± 5%
R569	4822 116 52271	33k 1/8W ± 5%
R570	4822 116 52271	33k 1/8W ± 5%
R571	4822 050 13302	3k3 1/8W ± 5%
R572	4822 050 13302	3k3 1/8W ± 5%
R573	4822 050 11502	1k5 1/8W ± 5%
R574	4822 050 11502	1k5 1/8W ± 5%
R575	4822 050 12201	220Ω 1/8W ± 5%
R576	4822 050 12201	220Ω 1/8W ± 5%
R577	4822 050 15603	56k 1/8W ± 5%
R578	4822 050 15603	56k 1/8W ± 5%
R579	4822 050 15602	5k6 1/8W ± 5%
R580	4822 050 15602	5k6 1/8W ± 5%
R581	4822 050 15602	5k6 1/8W ± 5%
R582	4822 050 15602	5k6 1/8W ± 5%
ZD551	4822 130 82577	ZENER 4.1-4.3V
ZD552	4822 130 82577	ZENER 4.1-4.3V

- FM tuner PCB -

C101	4822 122 31971	10pF ± 5%
C102	4822 122 31797	0.022µF 50V ± 10%
C103	4822 122 31647	100pF ± 10%
C106	4822 122 32442	0.01µF 50V ± 10%
C107	4822 122 31971	10pF ± 5%
C108	4822 122 31765	100pF ± 5%
C109	4822 122 32079	3.3pF ± 0.25
C110	4822 122 32129	12pF ± 5%
C112	4822 122 32444	33pF ± 5%
C113	4822 122 32442	0.01µF 50V ± 10%
C114	4822 122 31971	10pF ± 5%
C115	4822 122 32442	0.01µF 50V ± 10%
C116	4822 122 31971	10pF ± 5%
C120	4822 122 32444	33pF ± 5%
C121	4822 122 32079	3.3pF ± 0.25
C123	4822 122 31972	39pF ± 5%
C124	4822 124 23743	22µF 16V ± 20%
C151	4822 122 32079	3.3pF ± 0.25
C152	4822 122 31765	100pF ± 5%
C154	4822 122 32442	0.01µF 50V ± 10%
C155	4822 122 32442	0.01µF 50V ± 10%
C156	4822 122 31644	2200pF 50V ± 10%
C157	4822 122 31971	10pF ± 5%
C301	4822 124 23746	47µF 16V ± 20%
C303	4822 124 23717	0.047µF 50V ± 20%
C304	4822 122 31797	0.022µF 50V ± 10%
C305	4822 124 23736	1µF 50V ± 20%
C306	4822 122 31947	0.1µF 50V ± 20%
C307	4822 122 32442	0.01µF 50V ± 10%
C308	4822 122 32442	0.01µF 50V ± 10%
C309	4822 122 32442	0.01µF 50V ± 10%
C310	4822 124 23739	47µF 10V ± 20%
C311	4822 124 23748	3.3µF 50V ± 20%
C313	4822 124 23747	4.7µF 25V ± 20%
C314	4822 122 31765	100pF ± 5%
C315	4822 122 32442	0.01µF 50V ± 10%
C316	4822 124 23717	0.047µF 50V ± 20%
C317	4822 124 23715	0.015µF 50V ± 20%
C318	4822 124 23715	0.015µF 50V ± 20%
C319	4822 124 23736	1µF 50V ± 20%
C320	4822 122 32442	0.01µF 50V ± 10%
C322	4822 124 23736	1µF 50V ± 20%
C323	4822 124 23717	0.047µF 50V ± 20%
C324	4822 124 23747	4.7µF 25V ± 20%
C341	4822 124 23736	1µF 50V ± 20%
C342	4822 124 23736	1µF 50V ± 20%
C343	4822 124 22403	10µF 16V ± 20%
C381	4822 124 22403	10µF 16V ± 20%
C382	4822 124 23717	0.047µF 50V ± 20%
C383	4822 124 23736	1µF 50V ± 20%
C384	4822 124 22403	10µF 16V ± 20%
CF101	4822 242 70249	SFE10.7MS2A
CF301	4822 242 70249	SFE10.7MS2A
CF302	4822 242 70249	SFE10.7MS2A
CF303	4822 242 80255	CR 456F15
D380	4822 130 30621	DIODE 1N4148
D381	4822 130 30621	DIODE 1N4148
D383	4822 130 30621	DIODE 1N4148
D384	4822 130 30621	DIODE 1N4148
D385	4822 130 30621	DIODE 1N4148
IC101	4822 209 63921	IC LA1175
IC301	4822 209 63923	LA1145-FM IF
IC302	4822 209 63916	IC 826 2B
IC303	4822 209 63919	IC LA3430
IC304	4822 209 63918	IC DN1360E
L101	4822 157 63261	SPRING COIL
L102	4822 157 63259	SPRING COIL
L103	4822 157 63257	SPRING COIL
L104	4822 157 63258	SPRING COIL
L105	4822 157 63262	10.7M 47k-074-124
L106	4822 157 53774	COIL 4.7µH ± 10%
L301	4822 157 63284	COIL 6.8µH ± 10%
L302	4822 157 63284	COIL 6.8µH ± 10%
L303	4822 157 63264	10.7M 0236-1053
L304	4822 157 63263	10.7M 0236-1052
PD101	4822 130 81711	DIODE ISV172
Q101	4822 130 62719	FET 3SK1894.IDS19-30
Q103	4822 130 42298	2SC536G
Q301	4822 130 62205	2SA608G
Q302	4822 130 42298	2SC536G
Q303	4822 130 42298	2SC536G
Q304	4822 130 42298	2SC536G
R101	4822 050 14703	47k 1/8W ± 5%
R102	4822 050 14703	47k 1/8W ± 5%
R104	4822 050 12209	22Ω 1/8W ± 5%
R105	4822 050 13301	330Ω 1/8W ± 5%
R106	4822 050 14703	47k 1/8W ± 5%
R107	4822 051 10101	100Ω 1/8W ± 5%
R108	4822 051 10104	100k 1/8W ± 5%
R109	4822 050 12703	27k 1/8W ± 5%
R110	4822 051 10223	22k 1/8W ± 5%

C813	4822 124 23714	0.1µF 50V ± 10%
D402	4822 130 30621	DIODE 1N4148
D403	4822 130 30621	DIODE 1N4148
D404	4822 130 30621	DIODE 1N4148
D405	4822 130 30621	DIODE 1N4148
D406	4822 130 30621	DIODE 1N4148
D407	4822 130 30621	DIODE 1N4148
D408	4822 130 30621	DIODE 1N4148
D409	4822 130 30621	DIODE 1N4148
D601	4822 130 82582	DIODE 2A
D602	4822 130 82582	DIODE 2A
D603	4822 130 31438	DIODE 1N4001
D604	4822 130 31438	DIODE 1N4001
D605	4822 130 31438	DIODE 1N4001
D606	4822 130 30621	DIODE 1N4148
D607	4822 130 30621	DIODE 1N4148
D608	4822 130 30621	DIODE 1N4148
D609	4822 130 30621	DIODE 1N4148
D610	4822 130 30621	DIODE 1N4148
D611	4822 130 30621	DIODE 1N4148
D612	4822 130 80736	DIODE OF305
D613	4822 130 30621	DIODE 1N4148
D614	4822 130 30621	DIODE 1N4148
D616	4822 130 30621	DIODE 1N4148
D617	4822 130 31438	DIODE 1N4001
D618	4822 130 31438	DIODE 1N4001
D619	4822 130 30621	DIODE 1N4148
D620	4822 130 30621	DIODE 1N4148
D621	4822 130 30621	DIODE 1N4148
D622	4822 130 30621	DIODE 1N4148
D623	4822 130 30621	DIODE 1N4148
D624	4822 130 30621	DIODE 1N4148
D625	4822 130 30621	DIODE 1N4148
D701	4822 130 30621	DIODE 1N4148
D702	4822 130 30621	DIODE 1N4148
D703	4822 130 30621	DIODE 1N4148
D704	4822 130 30621	DIODE 1N4148
D705	4822 130 30621	DIODE 1N4148
D706	4822 130 30621	DIODE 1N4148
IC401	4822 214 51874	THIFI VKF-2-SDK
IC402	4822 209 63904	IC µPD1722GH-520-2A5
IC601	4822 209 63908	IC µPC78M05H 5V REGU
IC602	4822 209 72939	IC µPC4558C
IC701	4822 209 63906	IC SA571N COMPRESSOR
IC702	4822 209 63909	IC TK15022
IC703	4822 209 63909	IC TK15022
IC704	4822 209 63907	IC µPC4560C OPAMP
IC705	4822 209 63907	IC µPC4560C OPAMP
IC801	4822 209 63905	IC TA8215L POWER AMP
L401	4822 157 53774	COIL 4.7µH ± 10%
Q401	4822 130 42298	2SC536G
Q402	4822 130 42298	2SC536G
Q403	4822 130 42298	2SC536G
Q404	4822 130 42298	2SC536G
Q405	4822 130 62205	2SA608G
Q406	4822 130 62205	2SA608G
Q407	4822 130 61838	TRANS JE8550C
Q408	4822 130 62718	TRANS JE8050C
Q409	4822 130 42298	2SC536G
Q410	4822 130 42298	2SC536G
Q411	4822 130 62205	2SA608G
Q412	4822 130 62205	2SA608G
Q601	4822 130 61838	TRANS JE8550C
Q602	4822 130 42426	2SB772Q
Q603	4822 130 62718	TRANS JE8050C
Q604	4822 130 42426	2SB772Q
Q605	4822 130 42298	2SC536G
Q606	4822 130 42426	2SB772Q
Q607	4822 130 62205	2SA608G
Q608	4822 130 62205	2SA608G
Q609	4822 130 42298	2SC536G
Q611	4822 130 62718	TRANS JE8050C
Q612	4822 130 42298	2SC536G
Q613	4822 130 42298	2SC536G
Q614	4822 130 42298	2SC536G
Q616	4822 130 62205	2SA608G
Q617	4822 130 42298	2SC536G
Q618	4822 130 62205	2SA608G
Q619	4822 130 42298	2SC536G
Q622	4822 130 62205	2SA608G
Q701	4822 130 42298	2SC536G
Q702	4822 130 42298	2SC536G
Q703	4822 130 42298	2SC536G
Q704	4822 130 62718	TRANS JE8050C
Q705	4822 130 62718	TRANS JE8050C
Q706	4822 130 62718	TRANS JE8050C
Q707	4822 130 62718	TRANS JE8050C
Q708	4822 130 42298	2SC536G
Q709	4822 130 42298	2SC536G
R400	4822 050 12203	22k 1/8W ± 5%
R401	4822 050 11002	1k 1/8W ± 5%
R402	4822 050 11002	1k 1/8W ± 5%
R403	4822 050 11003	10k 1/8W ± 5%
R404	4822 050 12202	2k2 1/8W ± 5%
R405	4822 050 16801	680Ω 1/8W ± 5%
R406	4822 050 11004	100k 1/8W ± 5%
R407	4822 050 11004	100k 1/8W ± 5%
R408	4822 050 14703	47k 1/8W ± 5%
R409	4822 050 11003	10k 1/8W ± 5%
R410	4822 050 11003	10k 1/8W ± 5%
R411	4822 050 14703	47k 1/8W ± 5%
R413	4822 116 52271	33k 1/8W ± 5%
R414	4822 116 52271	33k 1/8W ± 5%
R415	4822 116 52271	33k 1/8W ± 5%
R417	4822 050 12203	22k 1/8W ± 5%
R418	4822 050 13302	3k3 1/8W ± 5%
R419	4822 050 14702	4k7 1/8W ± 5%
R420	4822 050 11502	1k5 1/8W ± 5%
R421	4822 050 14703	47k 1/8W ± 5%
R422	4822 050 14703	47k 1/8W ± 5%
R424	4822 050 14703	47k 1/8W ± 5%
R425	4822 050 13302	3k3 1/8W ± 5%
R426	4822 050 18202	8k2 1/8W ± 5%
R427	4822 050 12202	2k2 1/8W ± 5%
R428	4822 050 12202	2k2 1/8W ± 5%
R430	4822 050 12203	22k 1/8W ± 5%
R431	4822 050 12203	22k 1/8W ± 5%
R432	4822 116 52271	33k 1/8W ± 5%
R433	4822 050 11004	100k 1/8W ± 5%
R434	4822 116 52271	33k 1/8W ± 5%
R435	4822 050 11004	100k 1/8W ± 5%
R436	4822 050 11002	1k 1/8W ± 5%

R111	4822 050 13302	3k3 1/8W ± 5%
R112	4822 050 11501	150Ω 1/8W ± 5%
R137	4822 051 10103	10k 1/8W ± 5%
R139	4822 051 10103	10k 1/8W ± 5%
R141	4822 050 12209	22Ω 1/8W ± 5%
R152	4822 050 14703	47k 1/8W ± 5%
R153	4822 051 10101	100Ω 1/8W ± 5%
R154	4822 050 18203	82k 1/8W ± 5%
R155	4822 050 13903	39k 1/8W ± 5%
R156	4822 050 12002	2k 1/8W ± 5%
R157	4822 050 13902	3k9 1/8W ± 5%
R158	4822 050 13903	39k 1/8W ± 5%
R159	4822 050 12209	22Ω 1/8W ± 5%
R160	4822 050 12209	22Ω 1/8W ± 5%
R301	4822 051 10103	10k 1/8W ± 5%
R302	4822 051 10562	5k6 1/8W ± 5%
R303	4822 051 10103	10k 1/8W ± 5%
R304	4822 050 14703	47k 1/8W ± 5%
R306	4822 050 13302	3k3 1/8W ± 5%
R307	4822 050 12202	2k2 1/8W ± 5%
R308	4822 050 13301	330Ω 1/8W ± 5%
R309	4822 051 10102	1k 1/8W ± 5%
R310	4822 051 10104	100k 1/8W ± 5%
R311	4822 050 13302	3k3 1/8W ± 5%
R312	4822 050 13302	3k3 1/8W ± 5%
R313	4822 051 10103	10k 1/8W ± 5%
R314	4822 051 10333	33k 1/8W ± 5%
R315	4822 051 10223	22k 1/8W ± 5%
R316	4822 051 10104	100k 1/8W ± 5%
R317	4822 051 10102	1k 1/8W ± 5%
R318	4822 051 10102	1k 1/8W ± 5%
R320	4822 051 10103	10k 1/8W ± 5%
R381	4822 051 10102	1k 1/8W ± 5%
R382	4822 051 10102	1k 1/8W ± 5%
R383	4822 051 10102	1k 1/8W ± 5%
R384	4822 051 10223	22k 1/8W ± 5%
R385	4822 051 10104	100k 1/8W ± 5%
R386	4822 051 10104	100k 1/8W ± 5%
R387	4822 051 10562	5k6 1/8W ± 5%
VD101	4822 130 82587	SVC211SP DIODE
VD102	4822 130 82587	SVC211SP DIODE
VD103	4822 130 82587	SVC211SP DIODE
VR102	4822 100 11737	20k
VR103	4822 100 11736	100k
VR104	4822 100 11735	10k SVR
VR105	4822 100 11735	10k SVR

- Main PCB -

C401	4822 124 23709	0.01µF 16V ± 20%
C403	4822 124 23713	0.022µF 25V ± 20%
C404	4822 124 23725	0.33µF 25V ± 20%
C405	4822 124 23723	3.3µF 16V ± 20%
C406	4822 124 23709	0.01µF 16V ± 20%
C407	4822 124 23722	2.2µF 16V ± 20%
C408	4822 126 11474	100pF 50V ± 10%
C409	4822 124 23709	0.01µF 16V ± 20%
C411	4822 124 23732	47µF 16V ± 20%
C413	4822 126 11471	1500pF 16V ± 20%
C415	4822 126 11471	1500pF 16V ± 20%
C416	4822 126 11491	4700pF 50V ± 10%
C417	4822 126 11491	4700pF 50V ± 10%
C419	4822 126 11468	20pF ± 5%
C422	4822 124 23711	0.01µF 25V ± 20%
C423	4822 124 23709	0.01µF 16V ± 20%
C601	4822 124 23728	1000µF 16V ± 20%
C602	4822 124 23727	10µF 16V ± 20%
C604	4822 124 23731	0.47µF 16V ± 20%
C605	4822 124 23722	2.2µF 16V ± 20%
C606	4822 124 23732	47µF 16V ± 20%
C607	4822 124 23732	47µF 16V ± 20%
C608	4822 124 23732	47µF 16V ± 20%
C609	4822 124 23732	47µF 16V ± 20%
C610	4822 124 23724	0.1µF 25V ± 20%
C611	4822 124 40181	220µF 10V ± 20%
C612	4822 124 23732	47µF 16V ± 20%
C613	4822 124 23712	0.1µF 25V ± 20%
C614	4822 124 23731	0.47µF 16V ± 20%
C615	4822 124 23721	0.15µF 16V ± 20%
C616	4822 124 23757	4.7µF 25V ± 20%
C618	4822 124 23732	47µF 16V ± 20%
C619	4822 124 23732	47µF 16V ± 20%
C621	4822 124 23709	0.01µF 16V ± 20%
C622	4822 121 70004	1µF 25V ± 20%
C701	4822 124 23737	2.2µF 50V ± 20%
C702	4822 124 23727	10µF 16V ± 20%
C703	4822 124 23727	10µF 16V ± 20%
C704	4822 124 23726	100µF 10V ± 20%
C705	4822 124 23714	0.1µF 50V ± 10%
C706	4822 124 23714	0.1µF 50V ± 10%
C707	4822 126 11474	100pF 50V ± 10%
C708	4822 124 23726	100µF 10V ± 20%
C711	4822 126 11474	100pF 50V ± 10%
C712	4822 124 23716	0.15µF 50V ± 20%
C713	4822 124 23716	0.15µF 50V ± 20%
C714	4822 126 11477	220pF 50V ± 10%
C715	4822 124 23727	10µF 16V ± 20%
C716	4822 124 23732	47µF 16V ± 20%
C717	4822 124 23716	0.15µF 50V ± 20%
C718	4822 124 23716	0.15µF 50V ± 20%
C719	4822 124 23729	3.3µF 16V ± 20%
C720	4822 124 23716	0.15µF 50V ± 20%
C721	4822 124 23716	0.15µF 50V ± 20%
C722	4822 124 23727	10µF 16V ± 20%
C723	4822 124 23732	47µF 16V ± 20%
C724	4822 126 11477	220pF 50V ± 10%
C725	4822 124 23729	3.3µF 16V ± 20%
C726	4822 126 11478	39pF 50V ± 5%
C727	4822 126 11478	39pF 50V ± 5%
C728	4822 126 11478	39pF 50V ± 5%
C729	4822 126 11478	39pF 50V ± 5%
C730	4822 124 23727	10µF 16V ± 20%
C731	4822 124 23727	10µF 16V ± 20%
C732	4822 124 23727	10µF 16V ± 20%
C733	4822 124 23727	10µF 16V ± 20%
C801	4822 126 11475	1000pF 50V ± 10%
C806	4822 126 11475	1000pF 50V ± 10%
C808	4822 124 23735	4.7µF 25V ± 20%
C809	4822 124 23728	1000µF 16V ± 20%
C810	4822 124 23714	0.1µF 50V ± 10%
C811	4822 124 23714	0.1µF 50V ± 10%
C812	4822 124 23714	0.1µF 50V ± 10%

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69DC980

A91-302

Service
Service
Service

Car Stereo Service

Service Information

CORRECTIONS TO THE SERVICE MANUAL

Add following reference to the CD deck on the front page:
For repair information of the CD deck see Service manual CMX-200.

Add following text to the Table of contents:
1.2 Accessories page: 1

Add following accessories to page 1:

Retractable unit	:	4822 691 10351
Filter box assy	:	4822 121 20262
Direct. for use	:	4822 736 21241

Add following code numbers:

Mechanical parts list, page 20

223	4822 381 11271	519	4822 267 31368
301	4822 404 21166	521	4822 413 41662
302	4822 404 21167	522	4822 411 50604
516	4822 404 21168	523	4822 411 50605
517	4822 462 71771		

Electrical parts list, page 26

Keyboard PCB

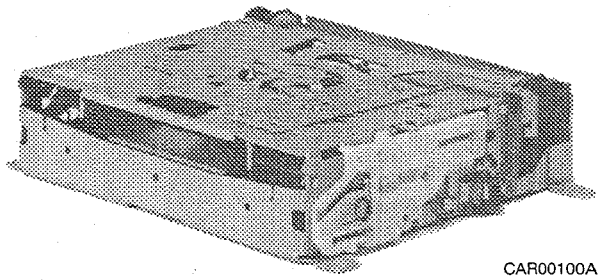
C1201	4822 122 31947	100nF 20% 50V
R1201-1205	4822 050 14301	430E 1% 0.4W
D1201-1203	4822 130 30621	1N4148
LED1201-1220	4822 130 82586	SLM245 red/green
Q1201	4822 130 62205	2SA608G
IC1201	4822 209 63922	μPD75316 μC
OSC1201	4822 242 80253	Ceram. filter 4.19MHz

PHILIPS

V04600

Car CD mechanism

Service
Service
Service



CAR00100A

ServiceManual

12 V

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1. SPECIFICATION

Operating voltage	: 10.8 - 15.6V
Operating temperature	: -10 - 50°C
Frequency response	: 5 - 20,000Hz ± 3dB
Harmonic distortion	: 0.015% (1kHz)
S/N ratio	: ≥ 80dB
Channel difference	: ≤ 3dB
Channel separation	: ≥ 70dB

COMPACT disc DIGITAL AUDIO

CLASS 1
LASER PRODUCT

Published by Philips Car Systems Printed in The Netherlands

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4822 725 24151

PCS 74 067

PHILIPS

2. FUNCTIONAL DESCRIPTION

When the Optical pick-up block has moved completely towards the centre and the limit switch is switched on, the sled motor starts to rotate the gear in the direction of the arrow (Fig. 1).

The deck section is fixed to the chassis. Now the lock gear switch is switched on and the loading motor starts rotating to eject the CD.

3.1 SERVICE HINTS

In PLAY mode, the deck section is only connected to the chassis through the dampers to avoid it is affected by vibrations.
The lock gear is fixed in the notch of the chassis only in STOP mode (Fig. 2).
If the lock gear is not firmly fixed in the notch, the disc cannot be inserted or removed.
In that case rotate the gear near the sled motor by hand till the lock gear is fixed firmly.

- When serviceing, do not take the Optical pick-up block apart and do not adjust the APC circuit.
  In case of a defect replace the complete Optical pick-up block (including the APC pcb).
- When re-assembling, place the Sensor pcb while keeping the pin pressed to the right (Fig. 3). Fixing the Sensor pcb forcibly may cause breakage of the switch.

3.2 SERVICE TOOLS

Test CD "skew disc"	4822 701 11922	Test CD "5" & "5A"	4822 397 30096
Test CD "eccentricity"	4822 701 11923	Test CD "Audio signals 1"	4822 397 30184

4. CHECKS

Initial start-up, rafoc unit
- Insert test CD "skew-disc".
- Playback tracks 1-9 (first 20 minutes) without interruptions.

Disc drive motor and servo motor
- Insert test CD "eccentricity".
- Playback tracks 1-20 without interruptions.

Interruptions, black dots, fingerprints
- Insert test CD "5A".
- Playback tracks 9, 11-17 (prefered: 17), 18, 19 (prefered 19) without interruptions.

Specification
- Check with test CD "Audio signals disc 1".

5.1 IC1 PINS

Pin	Description	Pin	Description	Pin	Description
1	Serial data out	18	Audio mute control out	40	Clock in
2	Clock out	19	PLL control out	41	Serial data out
3	Latch out	20	Clock out	42	Reserved
4	Loading start in	21	Reset out	43	Serial data in
	8cm disc eject compl in	22	Laser control out	44	Ground
5	Disc chucking compl in	23	8cm disc gain ctl out	45-48	Reserved
6	Chucking start out	24, 25	Ground	49	Sound ctl (tm) out
7	8/12cm disc detect in	26, 28	VDD	50-52	Ground
8	Lock gear detect in	27, 39	Chip select in	53-56	Tm (test mode) setting
9	Disc sensor in	29, 30	Crystal	57	Reserved
10,11	Ground	31	Reset in	59	Subcode sync S
12	Frame sync lock det in	32	Plunger control in		sgnl in
13	SENSE in	33, 34	Loading motor ctl out	60	Signal request out
14	Focus OK in	35	Test mode control out	61, 62	Sled motor control out
15	Temp detection out	36	Error ctl (tm) out	63	Subcode Q signal in
16	Digital mute ctl out	37	Reserved	64	Clock (subcode Q) out
17	Emphasis control out	38, 58	VDD		

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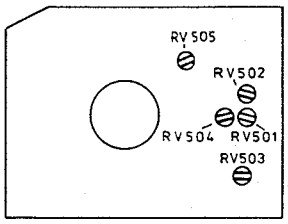

Fig. 7

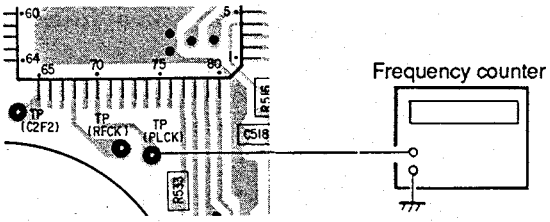

Fig. 8

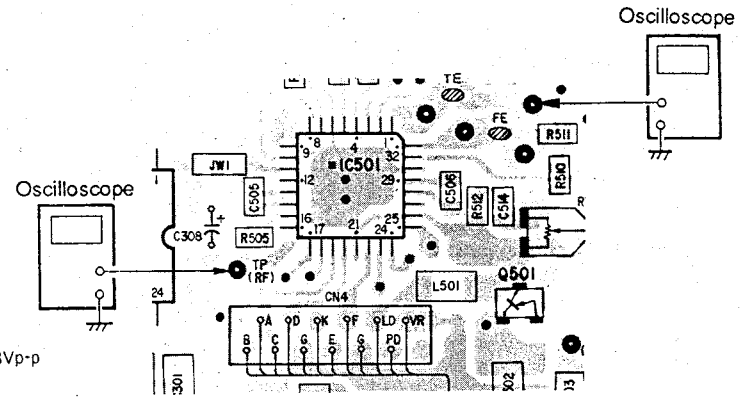

Fig. 9

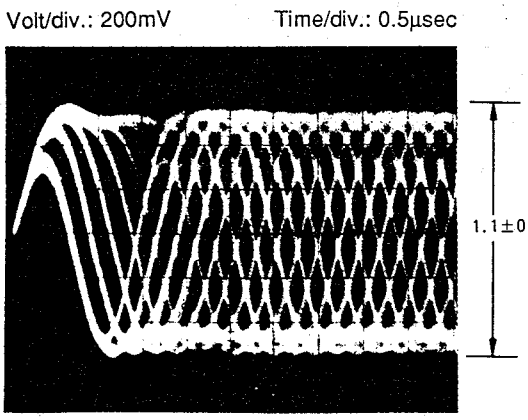

Fig. 10

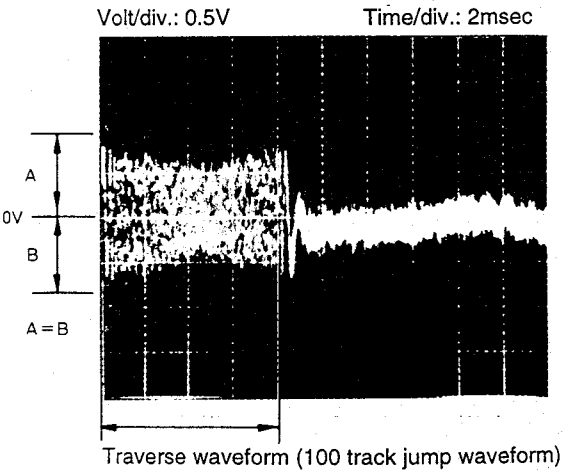

Fig. 11

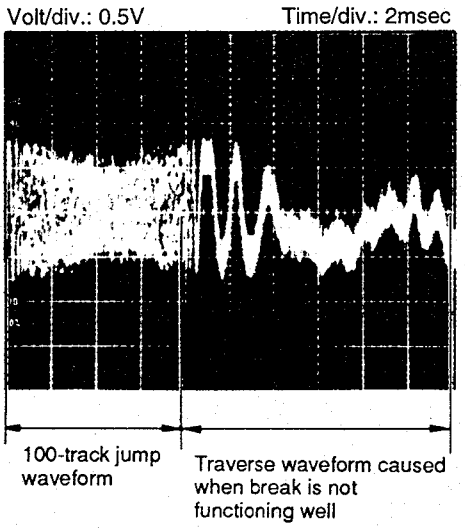

Fig. 12

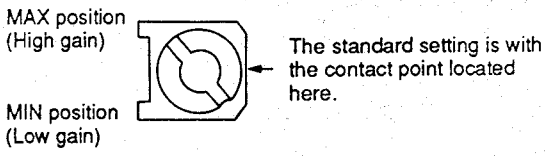

Fig. 14

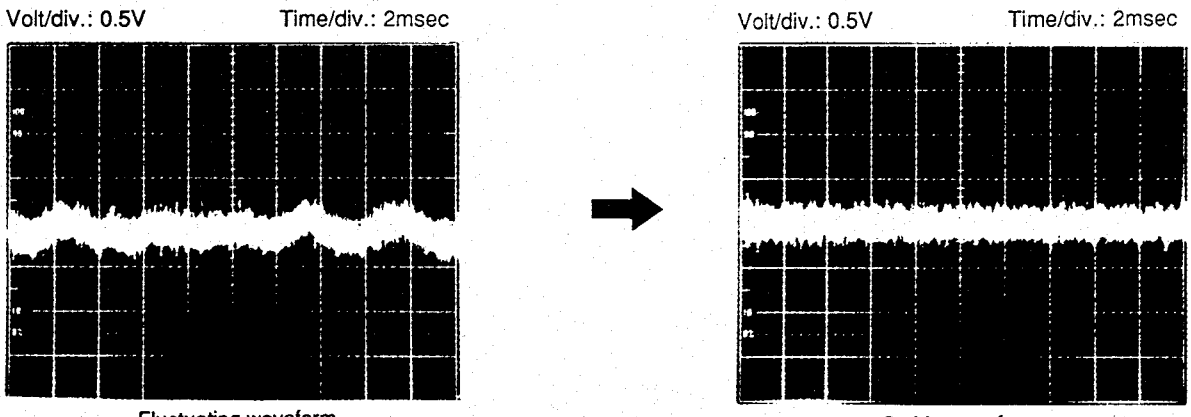

Fig. 13

6.1 MECHANICAL ADJUSTMENTS

Turntable height

- Loosen the fixing screws (2x).
- Adjust the height as shown in Fig. 4.

Lock gears A and B

As adjustment of lock gears A and B is the same, only the one of lock gear B is described.

- Rotate the gear near the sled motor manually to move the Optical block towards the outside until the lock gear is disengaged from the notch of the chassis.
- Adjust the lock gear as shown in Fig. 5.

Lock gear C

- Rotate the gear near the sled motor manually to move the Optical block towards the outside until the lock gear is disengaged from the notch of the chassis.
- Adjust the lock gear as shown in Fig. 6.

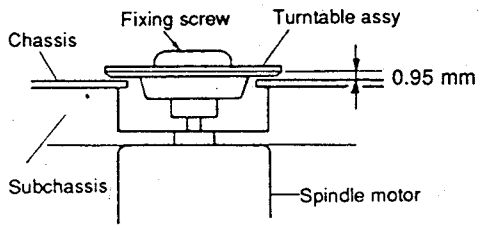

Fig. 4

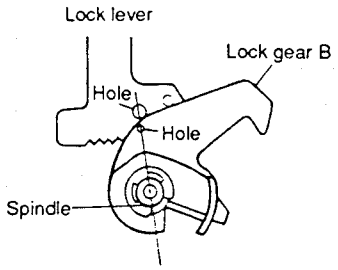

Fig. 5

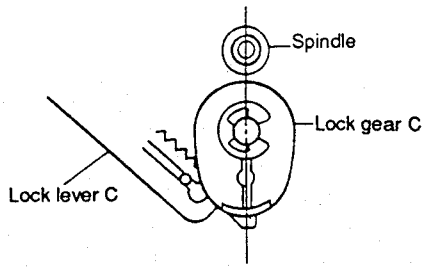

Fig. 6

6.2 ELECTRICAL ADJUSTMENTS

PLL free-run frequency

- Open solder bridge "EFM" (copper track 8-IC501).
- Connect frequency counter to test point "PLCK" (Fig. 8).
- Adjust RV505 to 4.3118 - 4.3318MHz.

Focus offset

- Connect oscilloscope to test point "RF" (Fig. 9).
- Load a disc and set mode to PLAY.
- Adjust RV502 to max. height and good shape of wave form (Fig. 10). Mark "◊" to be clearly distinguished at the centre).

Tracking offset

- Connect oscilloscope to test point "TE" (Fig. 9).
- Load a disc, set mode to PLAY and press a SEARCH button.
- Adjust RV501 to max. symmetry of traverse wave form (Fig. 11).
  Note: Traverse wave form: tracking error wave form observed when track is traversed.

Tracking gain

This adjustment is only necessary after replacing the Optical block or RV503.
In that case first adjust the focus and tracking offset (see above). The gain is too low: When music is selected by pressing a SEARCH button, the tracking jump wave form is not focused completely and the music selection is delayed (break function does not work well). See Fig. 12. The gain is too high: Noise, due to scratches and dust, is heard and the operation becomes unstable.
If this is so, proceed as follows:
Connect oscilloscope to test point "TE" (Fig. 9).
Load a disc and set mode to PLAY.
Adjust RV503 to a stable wave form (Fig. 13)

Focus gain

This adjustment is only necessary after replacing the Optical block or RV504.
The gain is too low: Focus does not function and no music is selected. The gain is too high: Noise, caused by scratches and dust, is heard and the operation becomes unstable.
If this is so, proceed as follows:

- Set RV504 to the standard position (Fig. 14).
- If operation noise (white noise type), caused by the double-axis device (lens section of the Optical block) is abnormally loud, set RV504 slightly counter-clockwise.

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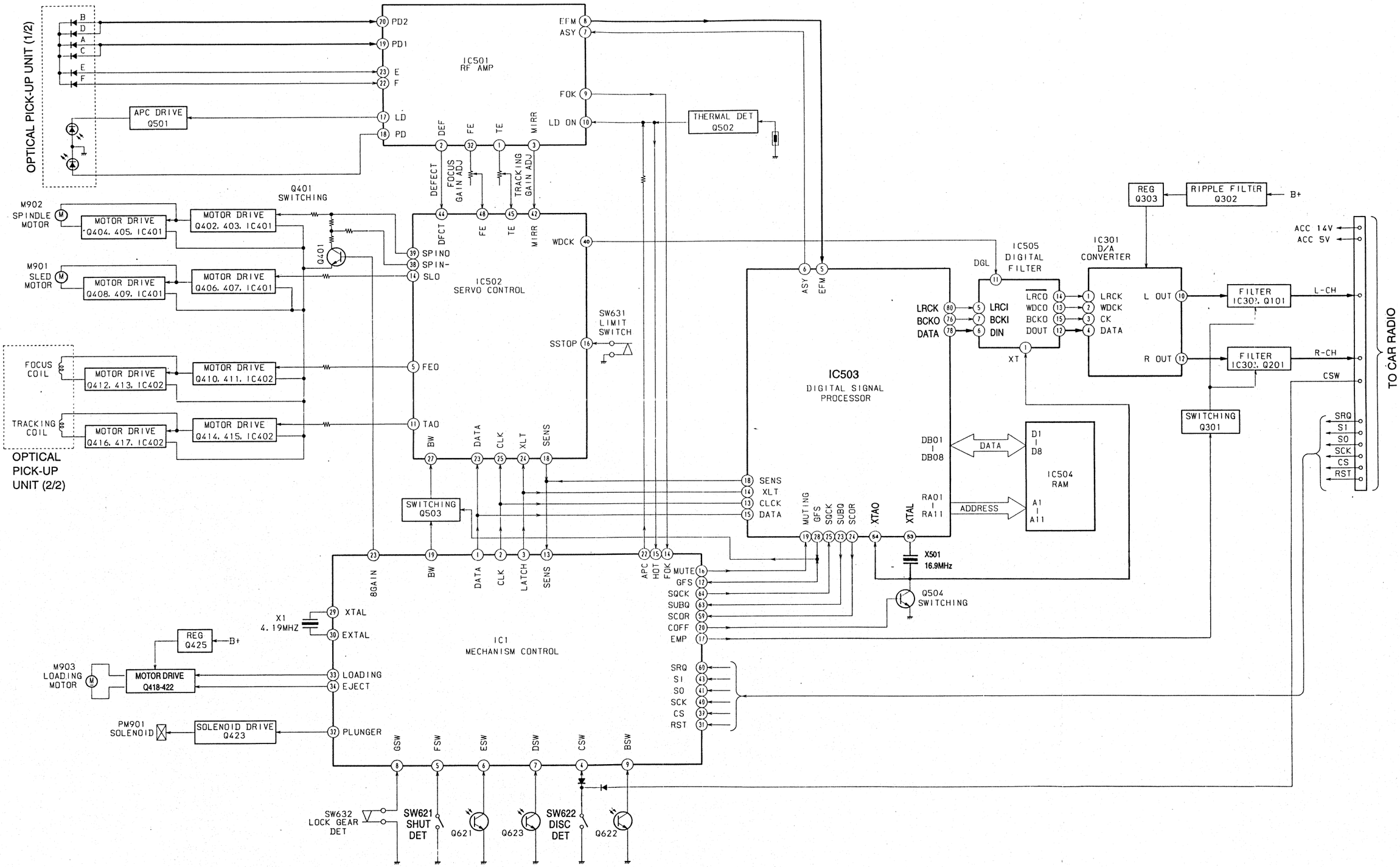
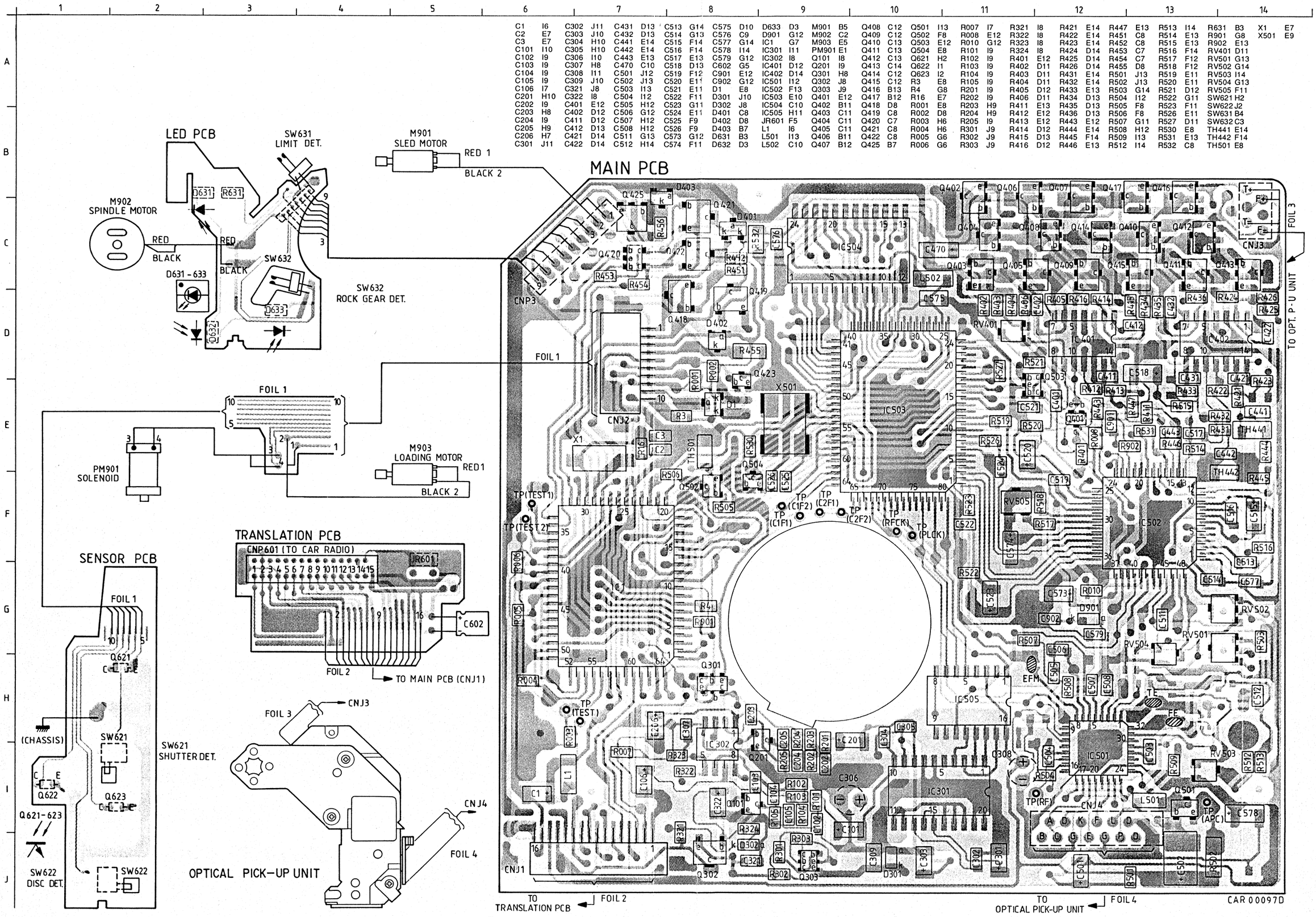
7. BLOCKDIAGRAM

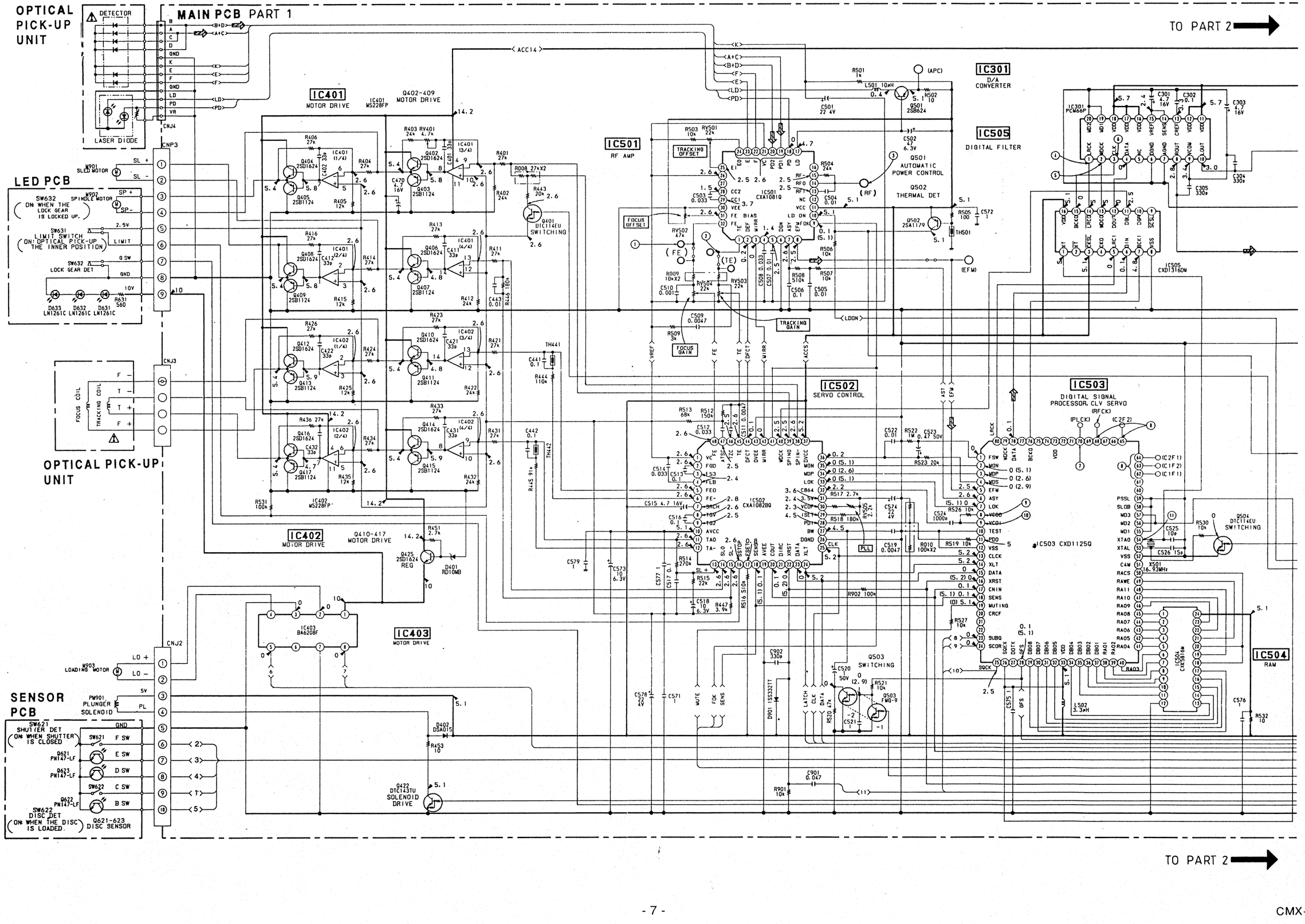


8. LAYOUT PCB'S & WIRING DIAGRAM

C1	I6	C302	J11	C431	D13	C513	G14	C575	D10	D633	D3	M901	B5	Q408	C12	Q501	I13	R007	I7	R321	I8	R421	E14	R447	E13	R513	I14	R631	B3	X1	E7
C2	E7	C303	J10	C432	D13	C514	G13	C576	C9	D901	G12	M902	C2	Q409	C12	Q502	F8	R008	E12	R322	I8	R422	E14	R451	C8	R514	E13	R901	G8	X501	E9
C3	E7	C304	H10	C441	E14	C515	F14	C577	G14	IC1	G7	M903	E5	Q410	C13	Q503	E12	R010	G12	R323	I8	R423	E14	R452	C8	R515	E13	R902	E13		
C101	I10	C305	H10	C442	E14	C516	F14	C578	I14	IC301	I11	PM901	E1	Q411	C13	Q504	E8	R101	I9	R324	I8	R424	D14	R453	C7	R516	F14	RV401	D11		
C102	I9	C306	I10	C443	E13	C517	E13	C579	G12	IC302	I8	Q101	I8	Q412	C13	Q621	H2	R102	I9	R401	E12	R425	D14	R454	C7	R517	F12	RV501	G13		
C103	I9	C307	H8	C470	C10	C518	D13	C602	G5	IC401	D12	Q201	I9	Q413	C14	Q622	I1	R103	I9	R402	D11	R426	D14	R455	D8	R518	F12	RV502	G14		
C104	I9	C308	I11	C501	J12	C519	F12	C901	E12	IC402	D14	Q301	H8	Q414	C12	Q623	I2	R104	I9	R403	D11	R431	E14	R501	J13	R519	E11	RV503	I14		
C105	I9	C309	J10	C502	J13	C520	E11	C902	G12	IC501	I12	Q302	J8	Q415	C12	R3	E8	R105	I9	R404	D11	R432	E14	R502	J13	R520	E11	RV504	G13		
C106	I7	C321	J8	C503	I13	C521	E11	D1	E8	IC502	F13	Q303	J9	Q416	B13	R4	G8	R201	I9	R405	D12	R433	E13	R503	G14	R521	D12	RV505	F11		
C201	H10	C322	I8	C504	I12	C522	F11	D301	J10	IC503	E10	Q401	E12	Q417	B12	R16	E7	R202	I9	R406	D11	R434	D13	R504	I12	R522	G11	SW621	H2		
C202	I9	C401	E12	C505	H12	C523	G11	D302	J8	IC504	C10	Q402	B11	Q418	D8	R001	E8	R203	H9	R411	E13	R435	D13	R505	F8	R523	F11	SW622	J2		
C203	H8	C402	D12	C506	G12	C524	E11	D401	C8	IC505	H11	Q403	C11	Q419	C8	R002	D8	R204	H9	R412	E12	R436	D13	R506	F8	R526	E11	SW631	B4		
C204	I9	C411	D12	C507	H12	C525	F9	D402	D8	JR601	F5	Q404	C11	Q420	C7	R003	H6	R205	I9	R413	E12	R443	E12	R507	G11	R527	D11	SW632	C3		
C205	H9	C412	D13	C508	H12	C526	F9	D403	B7	L1	I6	Q405	C11	Q421	C8	R004	H6	R301	J9	R414	D12	R444	E14	R508	H12	R530	E8	TH441	E14		
C206	H7	C421	D14	C511	G13	C573	G12	D631	B3	L501	I13	Q406	B11	Q422	C8	R005	G6	R302	J9	R415	D13	R445	F14	R509	I13	R531	E13	TH442	F14		
C301	J11	C422	D14	C512	H14	C574	F11	D632	D3	L502	C10	Q407	B12	Q425	B7	R006	G6	R303	J9	R416	D12	R446	E13	R512	I14	R532	C8	TH501	E8		

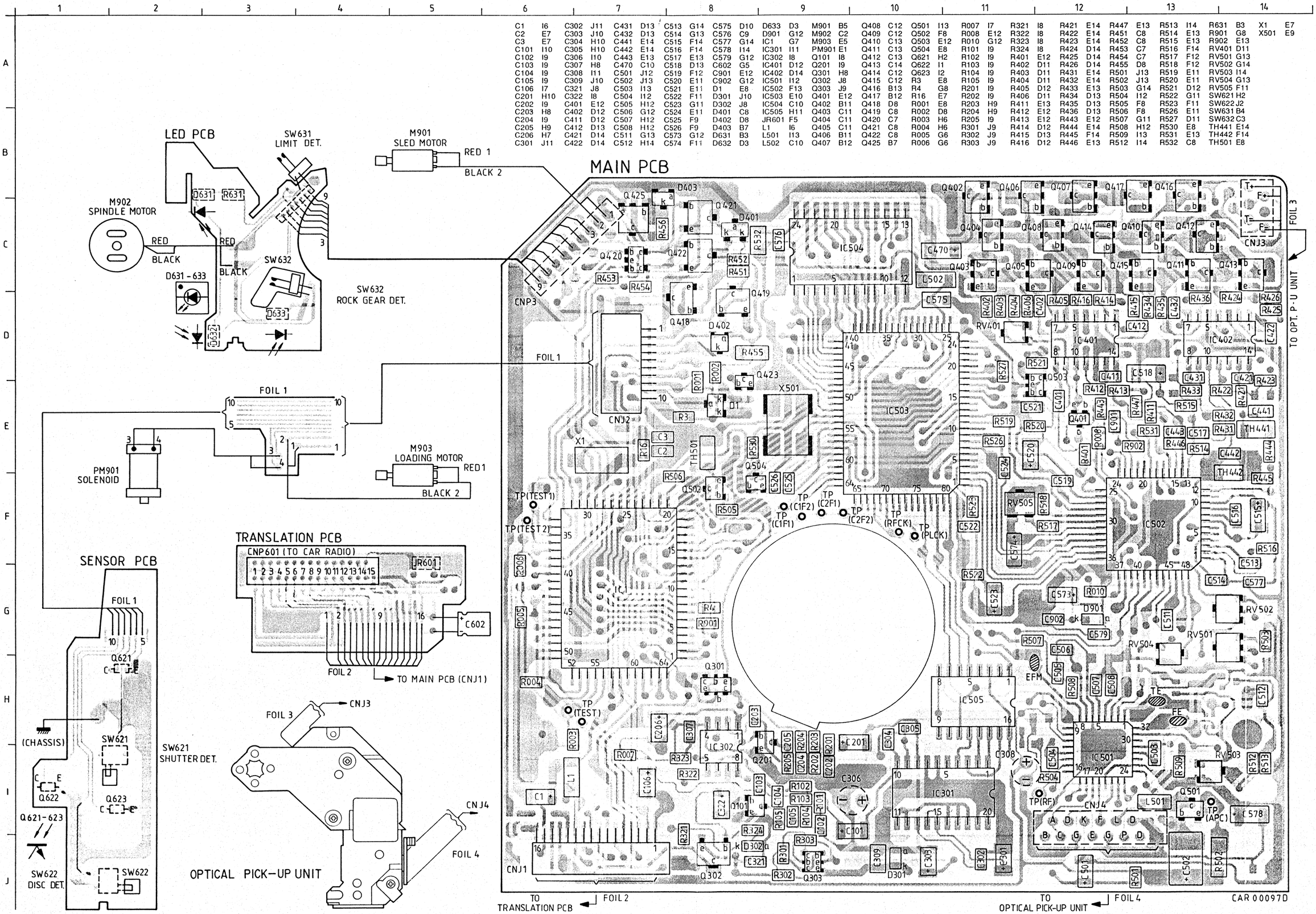


9. CIRCUIT DIAGRAM I

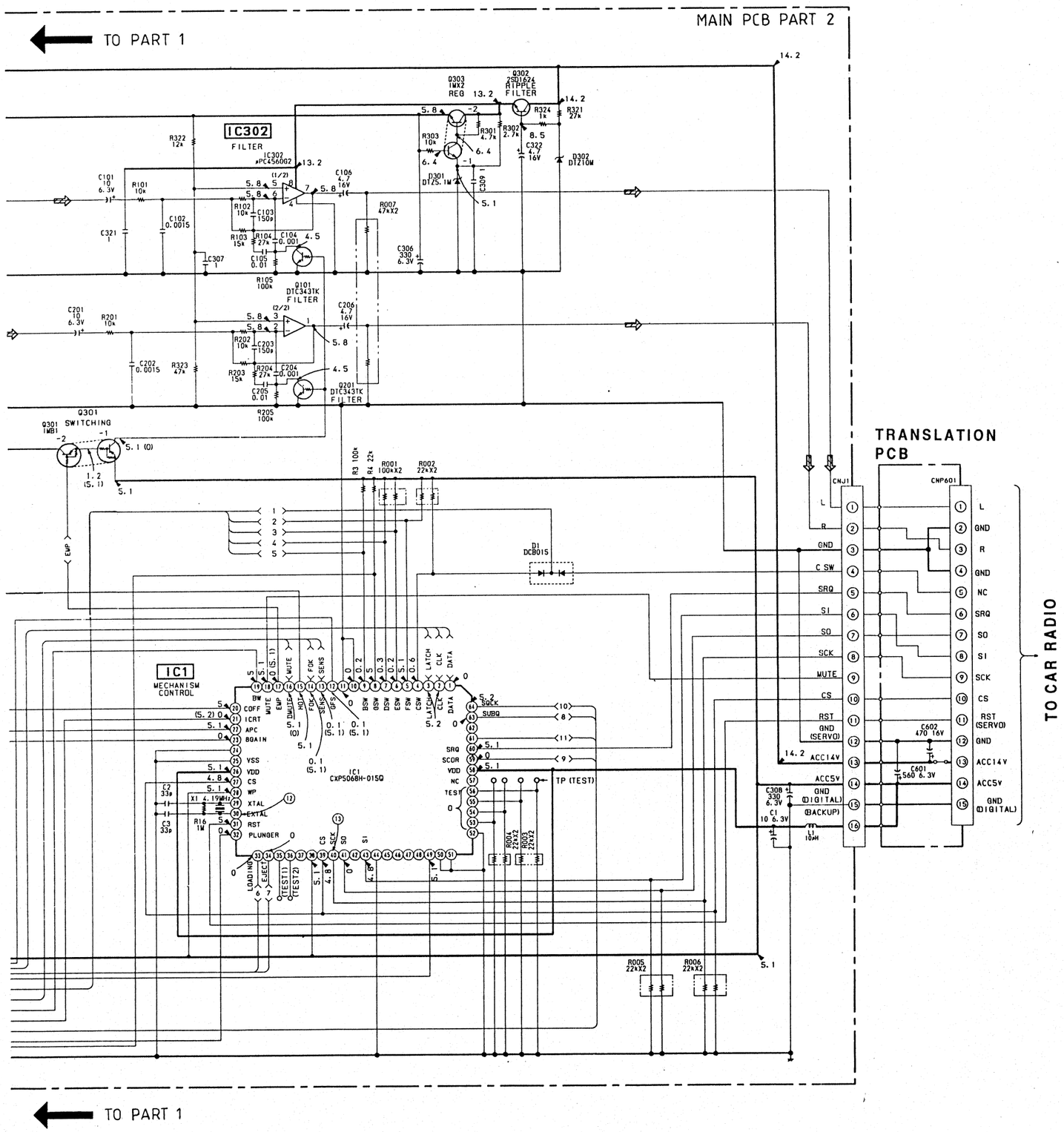


8. LAYOUT PCB'S & WIRING DIAGRAM

C1	I6	C302	J11	C431	D13	C513	G14	C575	D10	D633	D3	M901	B5	Q408	C12	Q501	I13	R007	I7	R321	I8	R421	E14	R447	E13	R513	I14	R631	B3	X1	E7
C2	E7	C303	J10	C432	D13	C514	G13	C576	C9	D901	G12	M902	C2	Q409	C12	Q502	F8	R008	E12	R322	I8	R422	E14	R451	C8	R514	E13	R901	G8	X501	E9
C3	E7	C304	H10	C441	E14	C515	F14	C577	G14	IC1	G7	M903	E5	Q410	C13	Q503	E12	R010	G12	R323	I8	R423	E14	R452	C8	R515	E13	R902	E13		
C101	I10	C305	H10	C442	E14	C516	F14	C578	I14	IC301	I11	PM901	E1	Q411	C13	Q504	E8	R101	I9	R324	I8	R424	D14	R453	C7	R516	F14	RV401	D11		
C102	I9	C306	I10	C443	E13	C517	E13	C579	G12	IC302	I8	Q101	I8	Q412	C13	Q621	H2	R102	I9	R401	E12	R425	D14	R454	C7	R517	F12	RV501	G13		
C103	I9	C307	H8	C470	C10	C518	D13	C602	G5	IC401	D12	Q201	I9	Q413	C14	Q622	I1	R103	I9	R402	D11	R426	D14	R455	D8	R518	F12	RV502	G14		
C104	I9	C308	I11	C501	J12	C519	F12	C901	E12	IC402	D14	Q301	H8	Q414	C12	Q623	I2	R104	I9	R403	D11	R431	E14	R501	J13	R519	E11	RV503	I14		
C105	I9	C309	J10	C502	J13	C520	E11	C902	G12	IC501	I12	Q302	J8	Q415	C12	R3	E8	R105	I9	R404	D11	R432	E14	R502	J13	R520	E11	RV504	G13		
C106	I7	C321	J8	C503	I13	C521	E11	D1	E8	IC502	F13	Q303	J9	Q416	B13	R4	G8	R201	I9	R405	D12	R433	E13	R503	G14	R521	D12	RV505	F11		
C201	H10	C322	I8	C504	I12	C522	F11	D301	J10	IC503	E10	Q401	E12	Q417	B12	R16	E7	R202	I9	R406	D11	R434	D13	R504	I12	R522	G11	SW621	H2		
C202	I9	C401	E12	C505	H12	C523	G11	D302	J8	IC504	C10	Q402	B11	Q418	D8	R001	E8	R203	H9	R411	E13	R435	D13	R505	F8	R523	F11	SW622	J2		
C203	H8	C402	D12	C506	G12	C524	E11	D401	C8	IC505	H11	Q403	C11	Q419	C8	R002	D8	R204	H9	R412	E12	R436	D13	R506	F8	R526	E11	SW631	B4		
C204	I9	C411	D12	C507	H12	C525	F9	D402	D8	JR601	F5	Q404	C11	Q420	C7	R003	H6	R205	I9	R413	E12	R443	E12	R507	G11	R527	D11	SW632	C3		
C205	H9	C412	D13	C508	H12	C526	F9	D403	B7	L1	I6	Q405	C11	Q421	C8	R004	H6	R301	J9	R414	D12	R444	E14	R508	H12	R530	E8	TH441	E14		
C206	H7	C421	D14	C511	G13	C573	G12	D631	B3	L501	I13	Q406	B11	Q422	C8	R005	G6	R302	J9	R415	D13	R445	F14	R509	I13	R531	E13	TH442	F14		
C301	J11	C422	D14	C512	H14	C574	F11	D632	D3	L502	C10	Q407	B12	Q425	B7	R006	G6	R303	J9	R416	D12	R446	E13	R512	I14	R532	C8	TH501	E8		



10. CIRCUIT DIAGRAM II



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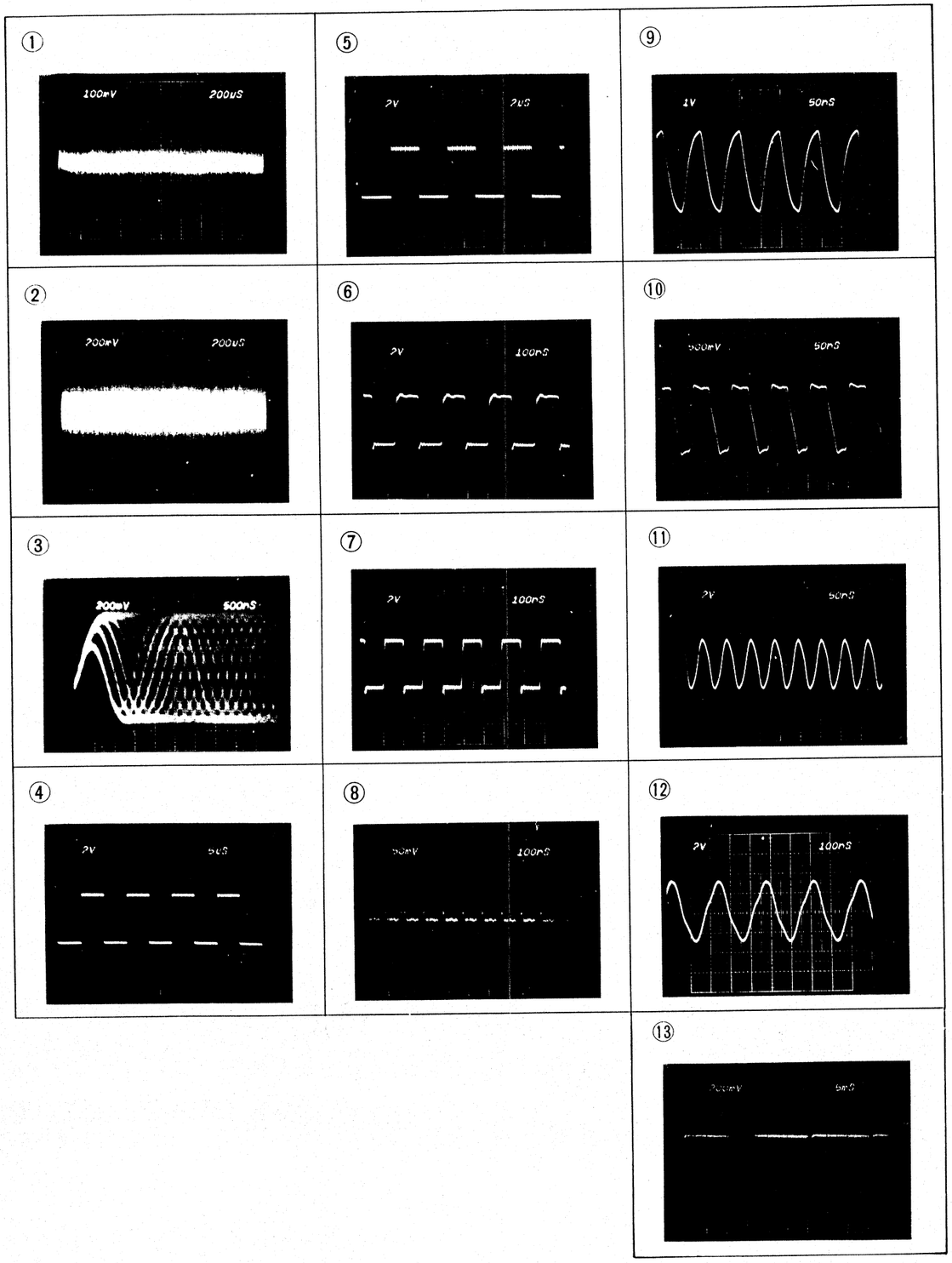
11. MEASURING CONDITIONS

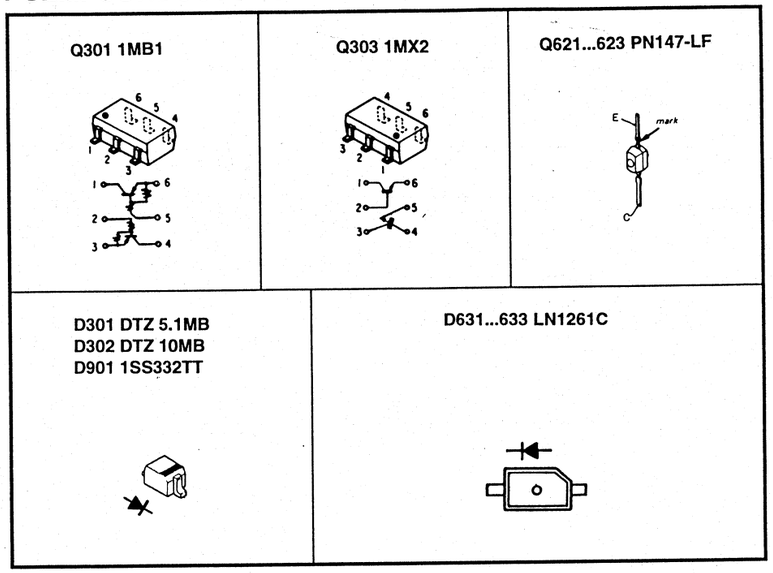
- Supply voltage: 14.4V DC
- Voltages and wave forms are DC with respect to ground. No signal applied.
  ...V : STOP
  (...V) : PLAY.
- Voltages are measured with an EVM, input impedance 10MΩ.
- Circled numbers refer to wave forms, measured with an oscilloscope.
- ▭ : adjustment for repair
  Signal path ⇨ : CD
- Position of switches:

Item	Function	Position
SW621	Shutter det.	Off
SW622	Disc det.	Off
SW631	Limit	On
SW632	Lock gear	On

11. WAVE FORMS

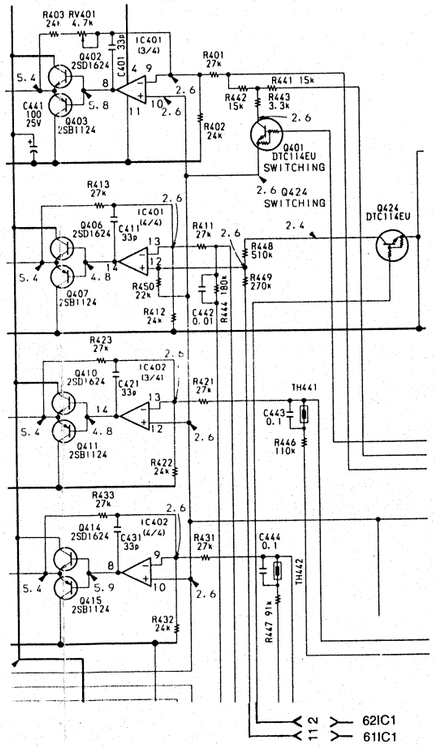


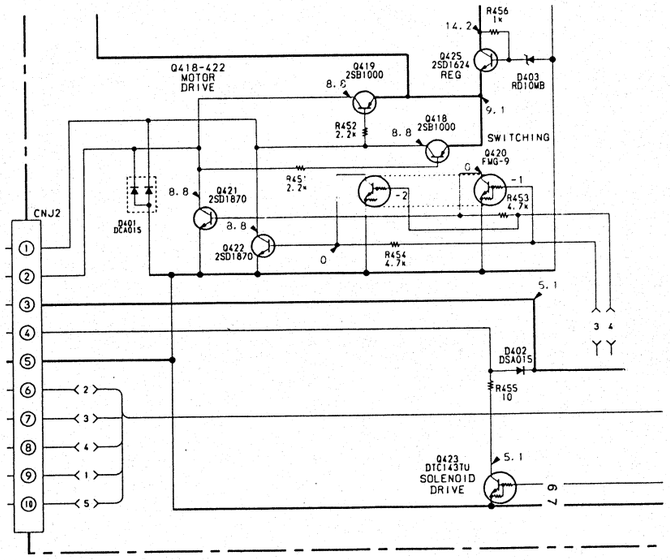
12. LEAD LAYOUT SEMI-CONDUCTORS



13. MODIFICATIONS IN PRODUCTION

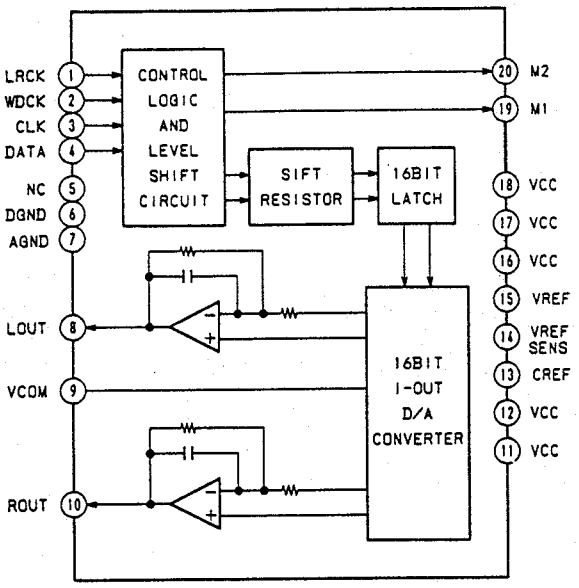
- During production the loading motor drive circuit has been redesigned into an IC-version. Circuit diagram I (page 7) shows the changed version. The original circuit is shown below. The layout of the main pcb shows the original version. The list of electrical parts shows the original parts.
- Q424, R448, R449 have been added. Also, some components have been renumbered. Refer to modified cicuit diagram below. This modification is shown neither in the layout of the main pcb, nor in the list of electrical parts.
- C901, 902, D902, R901, 902 have been added to 22-IC502. Original circuit: 22-IC502 connected to 16-IC503/21-IC1, connection 11 from 61-IC1 to R449.



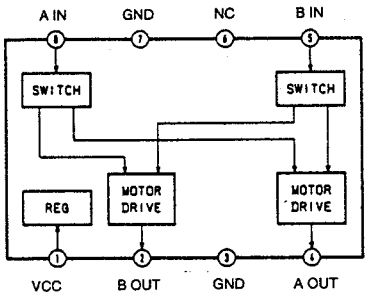


5.2 IC BLOCKDIAGRAMS

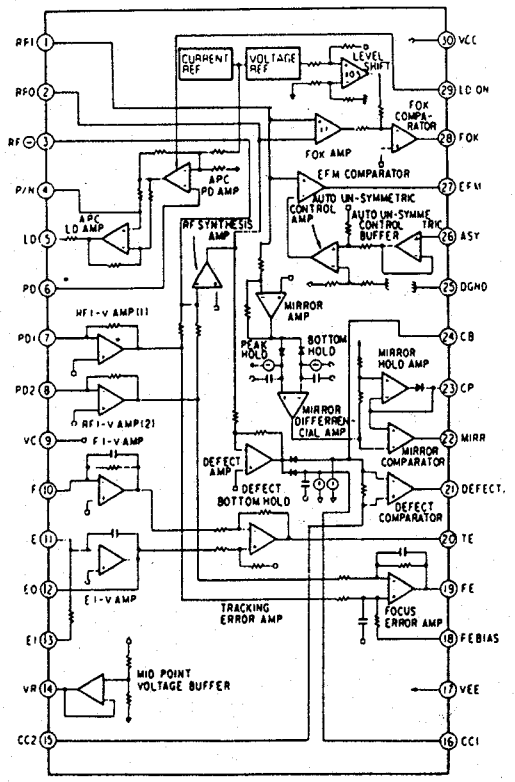
IC301 PCM66P



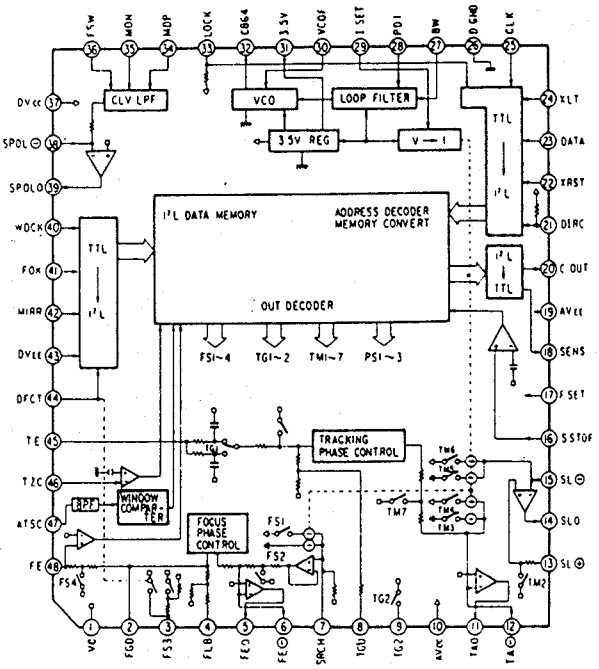
IC403 BA6208F



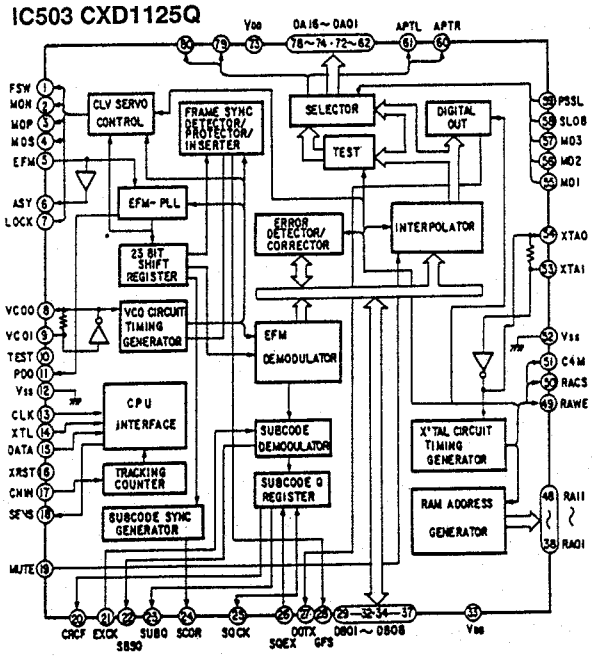
IC501 CXA1081Q



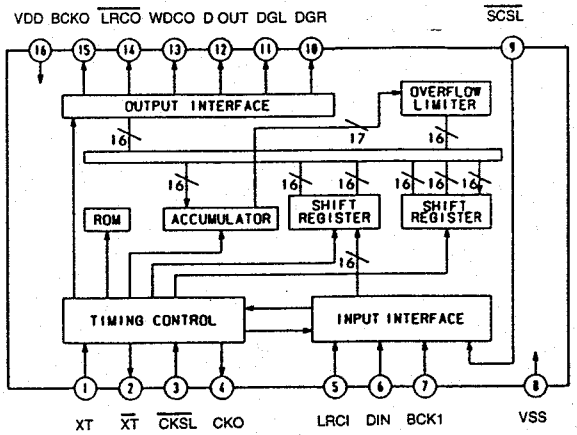
IC502 CXA1082BQ



IC503 CXD1125Q



IC505CXD1316D



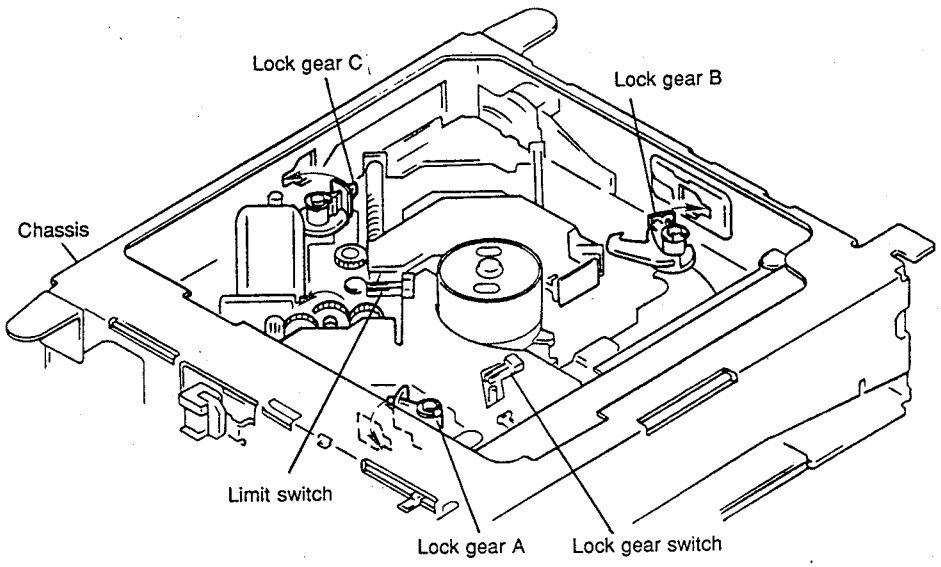


Fig. 1

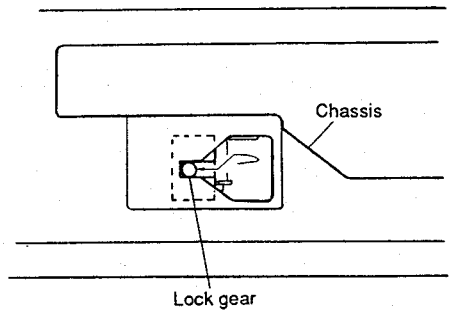


Fig. 2

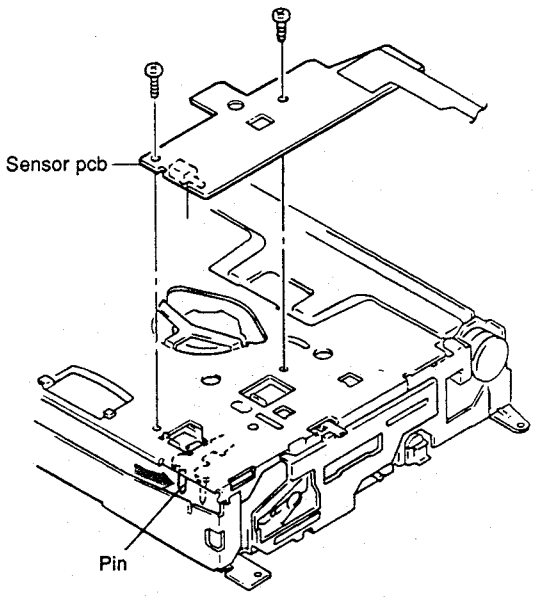
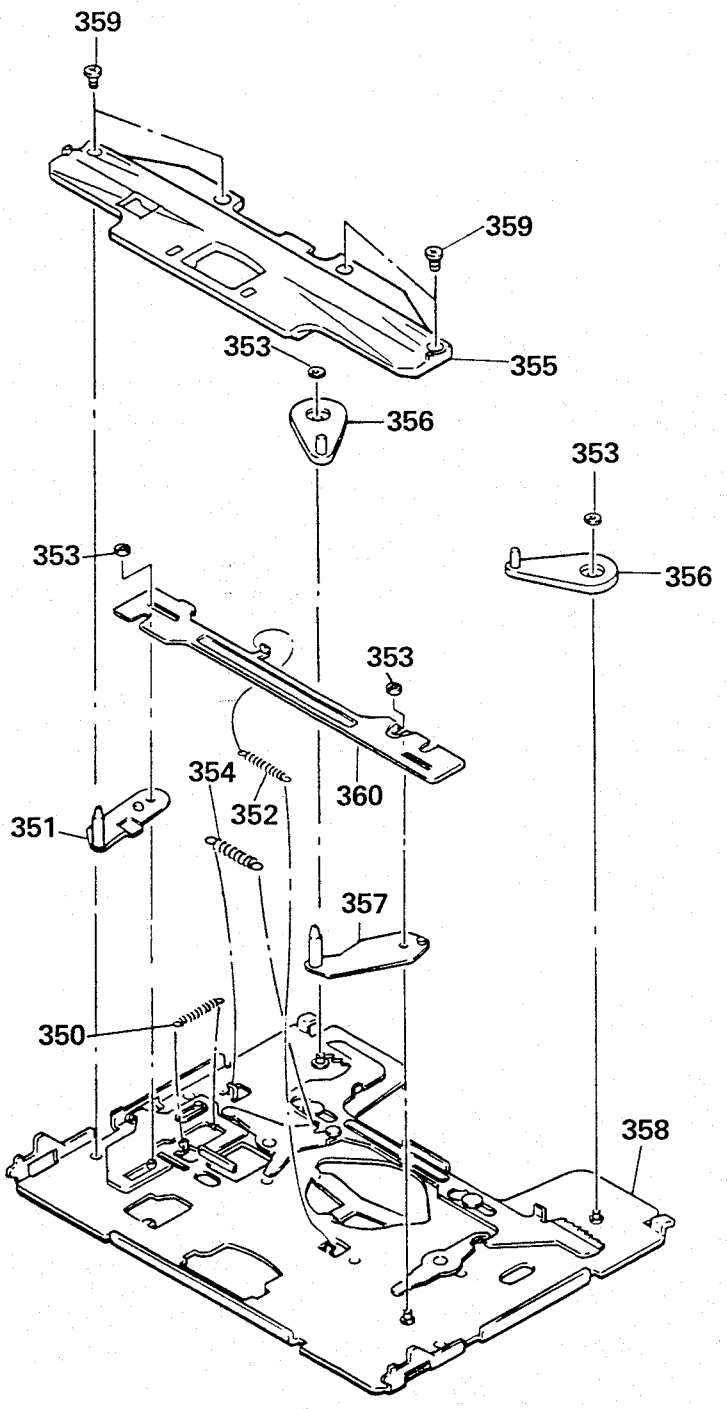


Fig. 3

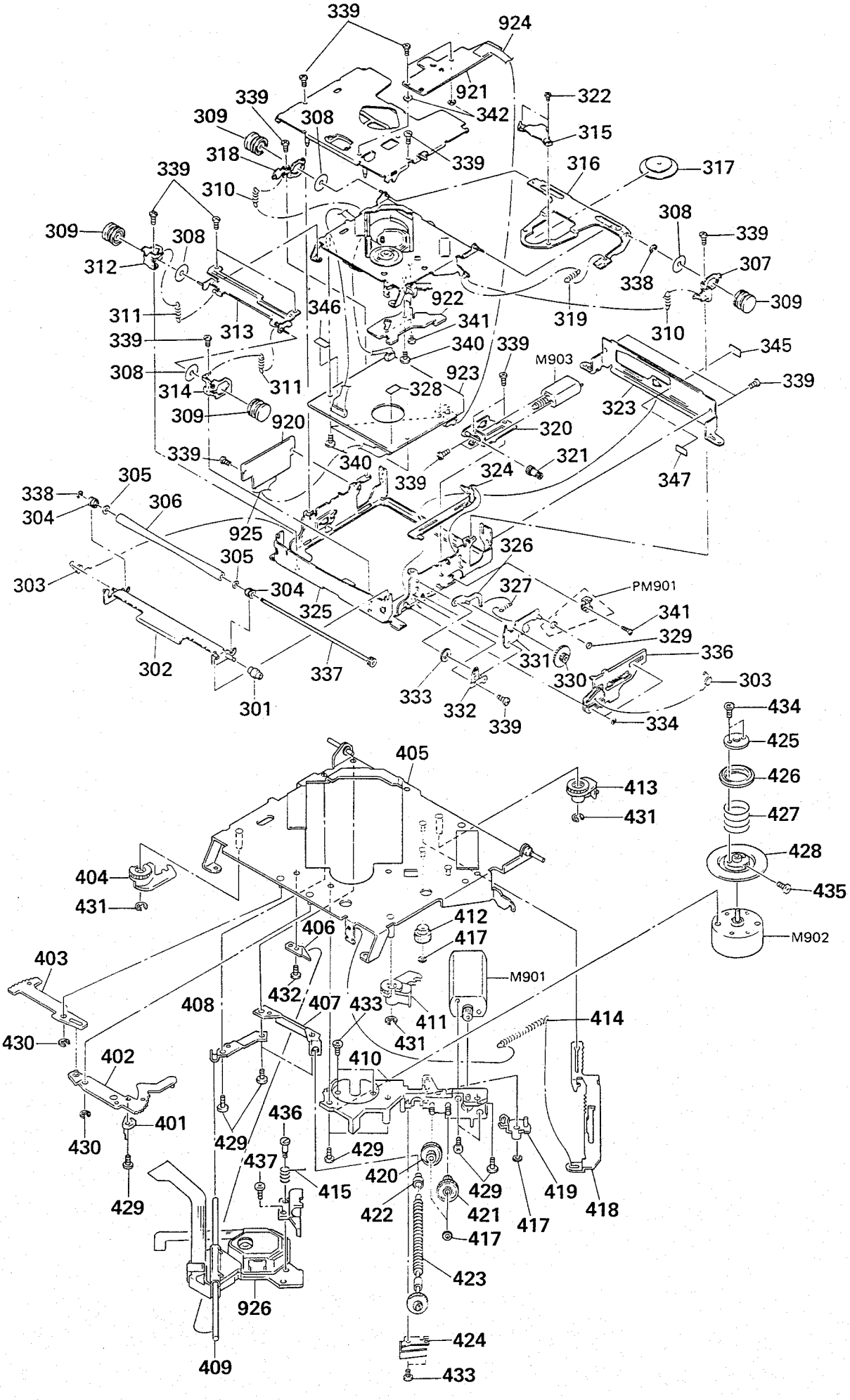


Only parts stated below are considered Service parts.

301	4822 520 40287	
303	4822 492 42575	
306	4822 528 70766	
309	4822 529 10275	
310	4822 492 33304	
311	4822 492 33303	
315	4822 404 21187	
317	4822 526 20195	
319	4822 492 33302	
321	4822 522 33154	
322	4822 502 13858	
327	4822 492 33308	
330	4822 522 33153	
333	4822 522 33151	
334	4822 532 12115	
336	4822 404 21188	
337	4822 535 93265	
338	4822 530 70599	
339	4822 502 13859	2x2.5
340	4822 502 13854	2x3
341	4822 502 13862	1.4x3
350	4822 492 33307	
352	4822 492 33306	
353	4822 532 12115	
354	4822 492 33305	
356	4822 522 33152	
401	4822 404 21186	
404	4822 522 33148	
410	4822 464 70583	
411	4822 522 33147	
412	4822 522 33144	
413	4822 522 33149	
414	4822 492 33301	
415	4822 492 42574	
416	4822 505 11108	
417	4822 532 52372	
419	4822 404 21185	
420	4822 522 33146	
421	4822 522 33145	
422	4822 532 52371	
423	4822 502 13852	
425	4822 532 12113	
426	4822 532 12114	
427	4822 492 52275	
428	4822 528 10832	
429	4822 502 13861	2x3.5
430	4822 530 70599	2.0
431	4822 530 70601	3.0
432	4822 502 13863	2x2
433	4822 502 13857	1.7x2.5
434	4822 502 13855	1.4x2.5
435	4822 502 13856	1.4x4
436	4822 502 13853	

922	4822 214 51903	LED pcb
923	4822 214 51902	Main pcb
924	4822 214 51904	Sensor foil
925	4822 214 51905	Transl. foil
926	4822 691 10352	Opt.p-u unit
	4822 691 30254	CMX-200 complete

14. EXPLODED VIEWS & LIST OF MECHANICAL PARTS



PCS 74 076

R402	4822 116 83443	24k 1% 1/16W
R403	4822 116 83443	24k 1% 1/16W
R404	4822 116 83446	27k 1% 1/16W
R405	4822 116 83441	12k 1% 1/16W
R406	4822 116 83446	27k 1% 1/16W
R411	4822 116 83446	27k 1% 1/16W
R412	4822 116 83443	24k 1% 1/16W
R413	4822 116 83446	27k 1% 1/16W
R414	4822 116 83446	27k 1% 1/16W
R415	4822 116 83441	12k 1% 1/16W
R416	4822 116 83446	27k 1% 1/16W
R421	4822 116 83446	27k 1% 1/16W
R422	4822 116 83443	24k 1% 1/16W
R423	4822 116 83446	27k 1% 1/16W
R424	4822 116 83446	27k 1% 1/16W
R425	4822 116 83441	12k 1% 1/16W
R426	4822 116 83446	27k 1% 1/16W
R431	4822 116 83446	27k 1% 1/16W
R432	4822 116 83443	24k 1% 1/16W
R433	4822 116 83446	27k 1% 1/16W
R434	4822 116 83446	27k 1% 1/16W
R435	4822 116 83441	12k 1% 1/16W
R436	4822 116 83446	27k 1% 1/16W
R443	4822 116 83438	20k 5% 1/16W
R444	4822 116 83445	110k 5% 1/16W
R445	4822 116 83444	91k 5% 1/16W
R446	4822 116 83433	180k 5% 1/16W
R447	4822 116 83425	3.9k 5% 1/16W
R451	4822 116 83423	2.2k 5% 1/16W
R452	4822 116 83423	2.2k 5% 1/16W
R453	4822 116 83426	4.7k 5% 1/16W
R454	4822 116 83426	4.7k 5% 1/16W
R455	4822 116 83418	10E 5% 1/8W
R456	4822 116 83422	1k 5% 1/16W
R502	4822 116 83418	10E 5% 1/8W
R503	4822 116 83439	10k 1% 1/16W
R505	4822 116 83421	100E 5% 1/16W
R506	4822 116 83439	10k 1% 1/16W
R507	4822 116 83439	10k 1% 1/16W
R508	4822 116 83437	510k 5% 1/16W
R509	4822 116 83436	3k 5% 1/16W
R510	4822 116 83427	5.6k 5% 1/16W
R511	4822 116 83427	5.6K 5% 1/16W
R512	4822 116 83434	220k 5% 1/16W
R513	4822 116 83428	18k 5% 1/16W
R514	4822 116 83448	270k 5% 1/16W
R515	4822 116 83429	22k 5% 1/16W
R516	4822 116 83437	510k 5% 1/16W
R517	4822 116 83424	2.7k 5% 1/16W
R518	4822 116 83433	180k 5% 1/16W
R519	4822 116 83439	10k 1% 1/16W
R520	4822 116 83431	47k 5% 1/16W
R521	4822 116 83439	10k 1% 1/16W
R522	4822 116 83435	1M 5% 1/16W
R523	4822 116 83438	20k 5% 1/16W

R526	4822 116 83439	10k 1% 1/16W
R527	4822 116 83439	10k 1% 1/16W
R530	4822 116 83439	10k 1% 1/16W
R531	4822 116 83432	100k 5% 1/16W
R532	4822 116 83418	10E 5% 1/8W
R550	4822 116 83435	1M 5% 1/16W
R631	4822 116 83415	560E 5% 1/8W
R997	4822 116 83447	27k 5% 1/16W
R998	4822 116 83452	30k 5% 1/16W
R999	4822 116 83449	330k 5% 1/16W
RV401	4822 100 30168	4.7k Adj.potm.
RV501	4822 100 30165	47k Adj.potm.
RV502	4822 100 30166	47k Adj.potm.
RV503	4822 100 30169	2k Adj.potm.
RV504	4822 100 30169	22k Adj.potm.
RV505	4822 100 30167	2.2k Adj.potm.
TH441	4822 111 92055	Thermistor
TH442	4822 111 92055	Thermistor
TH501	4822 111 92055	Thermistor

L1	4822 157 63598	10µH
L501	4822 157 63598	10µH
L502	4822 157 63597	3.3µH

D1	4822 130 82816	DCB015
D301	4822 130 82817	DTZ5.1B
D302	4822 130 82818	DTZ10B
D401	4822 130 82815	DCA015
D402	4822 130 82814	DSA015
D403	4822 130 82813	RD10M
D631	4822 130 82811	LED LN1261C
D632	4822 130 82811	LED LN1261C
D633	4822 130 82811	LED LN1261C

Q101	4822 130 62893	DTC343TK
Q201	4822 130 62893	DTC343TK
Q301	4822 130 62895	IMB1
Q302	4822 130 62888	2SD1950
Q303	4822 130 62896	IMX2
Q401	4822 130 62892	DTC114EU
Q402	4822 130 62884	2SD1624-T
Q403	4822 130 62885	2SB1124-T
Q404	4822 130 62884	2SD1624-T
Q405	4822 130 62885	2SB1124-T
Q406	4822 130 62884	2SD1624-T
Q407	4822 130 62885	2SB1124-T
Q408	4822 130 62884	2SD1624-T
Q409	4822 130 62885	2SB1124-T
Q410	4822 130 62884	2SD1624-T
Q411	4822 130 62885	2SB1124-T
Q412	4822 130 62884	2SD1624-T
Q413	4822 130 62885	2SB1124-T
Q414	4822 130 62884	2SD1624-T

15. List of electrical parts

C1	4822 124 23941	10µF 20% 6.3V
C2	4822 126 11892	33pF 5% 50V
C3	4822 126 11892	33pF 5% 50V
C101	4822 124 23941	10µF 20% 6.3V
C102	4822 126 11896	1.5nF 10% 50V
C103	4822 126 11893	150pF 5% 50V
C104	4822 126 11895	1nF 10%50V
C105	4822 126 11898	10nF 10% 25V
C106	4822 124 23942	4.7µF 20% 16V
C201	4822 124 23941	10µF 20% 6.3V
C202	4822 126 11896	1.5nF 10% 50V
C203	4822 126 11893	150pF 5% 50V
C204	4822 126 11895	1nF 10% 50V
C205	4822 126 11898	10nF 10% 25V
C206	4822 124 23942	4.7µF 20% 16V
C301	4822 124 11247	4.7µF 10% 16V
C302	4822 126 11902	100nF 10% 25V
C303	4822 124 11247	4.7µF 10% 16V
C304	4822 126 11894	330pF 10% 50V
C305	4822 126 11894	330pF 10% 50V
C306	4822 124 23945	330µF 20% 6.3V
C307	4822 126 11903	1µF % 16V
C308	4822 124 23945	330µF 20% 6.3V
C309	4822 126 11903	1µF % 16V
C321	4822 126 11903	1µF % 16V
C322	4822 124 23942	4.7µF 20% 16V
C401	4822 126 11892	33pF 5% 50V
C402	4822 126 11892	33pF 5% 50V
C411	4822 126 11892	33pF 5% 50V
C412	4822 126 11892	33pF 5% 50V
C421	4822 126 11892	33pF 5% 50V
C422	4822 126 11892	33pF 5% 50V
C431	4822 126 11892	33pF 5% 50V
C432	4822 126 11892	33pF 5% 50V
C441	4822 126 11902	100nF 10% 25V
C442	4822 126 11902	100nF 10% 25V
C443	4822 126 11898	10nF 10% 25V
C470	4822 124 23942	4.7µF 20% 16V
C501	4822 124 23939	22µF 20% 4V
C502	4822 124 11246	47µF 20% 6.3V
C503	4822 126 11901	33nF 10% 25V
C504	4822 126 11899	2.7nF 10% 50V
C505	4822 126 11898	10nF 10% 25V
C506	4822 126 11902	100nF 10% 25V
C507	4822 126 11898	10nF 10% 25V
C508	4822 126 11901	33nF 10% 25V
C509	4822 126 11895	1nF 10% 50V
C510	4822 126 11895	1nF 10% 50V
C511	4822 126 11897	4.7nF 10% 50V
C512	4822 126 11901	33nF 10% 25V
C513	4822 126 11902	100nF 10% 25V
C514	4822 126 11901	33nF 10% 25V
C515	4822 124 11247	4.7µF 10% 16V
C516	4822 126 11902	100nF 10% 25V
C517	4822 126 11902	100nF 10% 25V

C518	4822 124 23941	10µF 20% 6.3V
C519	4822 126 11897	4.7nF 10% 50V
C520	4822 124 23944	1µF 20% 50V
C521	4822 126 11903	1µF % 16V
C522	4822 126 11898	10nF 10% 25V
C523	4822 124 23943	0.47µF 20% 50V
C524	4822 126 11895	1nF 10% 50V
C525	4822 126 11891	4pF 25% 50V
C526	4822 126 11891	4pF 25% 50V
C527	4822 126 11892	33pF 5% 50V
C550	4822 126 11903	1µF % 16V
C571	4822 126 11903	1µF % 16V
C572	4822 126 11903	1µF % 16V
C573	4822 124 23941	10µF 20% 6.3V
C574	4822 124 23939	22µF 20% 4V
C575	4822 126 11903	1µF % 16V
C576	4822 126 11903	1µF % 16V
C577	4822 126 11903	1µF % 16V
C578	4822 124 23939	22µF 20% 4V
C579	4822 126 11903	1µF % 16V
C580	4822 126 11895	1nF 10% 50V

JR601	4822 116 83416	Jumper 0E
JR902	4822 116 83451	Jumper 0E
R3	4822 116 83432	100k 5% 1/16W
R4	4822 116 83429	22k 5% 1/16W
R16	4822 116 83435	1M 5% 1/16W
R001	4822 111 92054	100k NETWORK
R002	4822 111 92051	22k NETWORK
R003	4822 111 92051	22k NETWORK
R004	4822 111 92051	22k NETWORK
R005	4822 111 92051	22k NETWORK
R006	4822 111 92051	22k NETWORK
R007	4822 111 92053	47k NETWORK
R008	4822 111 92052	27k NETWORK
R009	4822 111 92049	10k NETWORK
R010	4822 111 92054	100k NETWORK
R101	4822 116 83439	10k 1% 1/16W
R102	4822 116 83439	10k 1% 1/16W
R103	4822 116 83442	15k 1% 1/16W
R104	4822 116 83446	27k 1% 1/16W
R105	4822 116 83432	100k 5% 1/16W
R201	4822 116 83419	10k 1% 1/16W
R202	4822 116 83419	10k 1% 1/16W
R203	4822 116 83442	15k 1% 1/16W
R204	4822 116 83446	27k 1% 1/16W
R205	4822 116 83432	100k 5% 1/16W
R301	4822 116 83426	4.7k 5% 1/16W
R302	4822 116 83424	2.7k 5% 1/16W
R303	4822 116 83439	10k 1% 1/16W
R321	4822 116 83446	27k 1% 1/16W
R322	4822 116 83441	12k 1% 1/16W
R323	4822 116 83431	47k 5% 1/16W
R324	4822 116 83422	1k 5% 1/16W
R401	4822 116 83446	27k 1% 1/16W

PCS 74 076

Q415	4822 130 62885	2SB1124-T
Q416	4822 130 62884	2SD1624-T
Q417	4822 130 62885	2SB1124-T
Q418	4822 130 62889	2SB1000
Q419	4822 130 62889	2SB1000
Q420	4822 130 62894	FMG-9
Q421	4822 130 63617	2SD1870
Q422	4822 130 63617	2SD1870
Q423	4822 130 61908	DTC143TU
Q425	4822 130 62884	2SD1624-T
Q501	4822 130 62887	2SB624
Q502	4822 130 62891	2SA1179
Q503	4822 130 62894	FMG-9
Q504	4822 130 62892	DTC114EU
Q505	4822 130 61908	DTC143TU
Q621	4822 130 62882	PN147-FL
Q622	4822 130 62882	PN147-FL
Q623	4822 130 62882	PN147-FL

IC1	4822 209 30566	CPX506BH-035Q µC
IC301	4822 209 30029	PCM66P D/A converter
IC302	4822 209 30568	NJM4560M Dig. filter
IC401	4822 209 30567	M5228FP Motor drive
IC402	4822 209 30567	M5228FP Fo/Tr servo
IC501	4822 209 61379	CXA1081Q RF Amp.
IC502	4822 209 61381	CXA1082BQ Servo ctl
IC503	4822 209 30565	CXD1125Q Signal µP
IC505	4822 209 32926	SM5807ES Dig. filter

Miscellaneous

CNJ1	4822 267 51124	16p brown
CNJ2	4822 267 51123	10p brown
CNJ3	4822 267 41019	5p white
CNJ4	4822 267 51125	13p white
CNP3	4822 267 51122	9p white
CNP601	4822 265 41156	15p
M901	4822 361 30375	SLED motor
M902	4822 361 30376	Turntable motor
M903	4822 361 30374	Loading motor
PM901	4822 281 50166	Plunger motor
SW621	4822 276 13168	Shutter detector
SW622	4822 276 13168	Disc detector
SW631	4822 271 30762	Limit detector
SW632	4822 271 30762	Rock gear detector
X1	4822 242 81008	Ceram resonator 4.19MHz
X501	4822 242 81004	Crystal 16.93MHz